1859 FIFTY-NINTH YEAR 1917

AMERICAN GAS ENGINEERING JOURNAL

FORMERLY

AMERICAN GAS LIGHT JOURNAL

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WHOLE No. 3109

NEW YORK, SATURDAY, OCTOBER 6, 1917

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SMITHSONIAN DEPOSIT

Continuous Readers Are Best Buyers

A Superintendent of Manufacture says:

"I have been a constant reader of your excellent paper for the past 25 years."

The President of a large Lighting Company says:

"I began reading the JOURNAL in 1884—am still reading every issue."

A Superintendent of Works Department says:

"I read the JOURNAL regularly, and it may interest you to know that I have bound copies in my office for every year since 1885."

A Prominent Consulting Engineer says:

"I have been reading the JOURNAL for over 20 years, and I think a great deal of it."

The Superintendent of a large Western Lighting Company says:

"I have read the JOURNAL for about 20 years. Every company by whom I have been employed has subscribed to the JOURNAL, and it has always come to my desk."

Ask our Service Department to tell you why.

(The above abstracts are from a few of a large number of similar letters received by us since August 1, 1917—originals in file at this office.)

AMERICAN GAS ENGINEERING JOURNAL

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NOTE:—

This advertisement is only to keep
you reminded of the

U. G. I. Vertical Retorts

The best system of coal carbonization
in America today

Figures prove this and the guarantees of

THE UNITED GAS IMPROVEMENT CO., Philadelphia

Back it up

The Gas Machinery Company

Cleveland, Ohio

COAL GAS PLANTS **WATER GAS PLANTS**

BY-PRODUCT MACHINERY

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Saving of 79.7 Per Cent in Floor Space But One of Many Advantages Gained by Replacing Oil-Burning Tile-Drying Installation by Gas

All Labor Except That of Oiling Motor and Fan Bearings Eliminated in Newest Installation—Output of Tiles Greatly Increased—Saving in Cost of Drying of 92.9 Per Cent Effected

By F. H. MUGG

Industrial Gas Engineer, San Diego Consolidated Gas & Electric Company, San Diego, Cal.

Until recently the California China Products Company, at National City, Cal., dried its fancy glazed tiles by means of an oil-burning installation. The industrial department of the San Diego Consolidated Gas & Electric Company has converted this installation to gas, with marked savings in cost of drying to the manufacturer and increased speed of output and variety in size of charges.

Air Heated to 140 deg. Fahr.

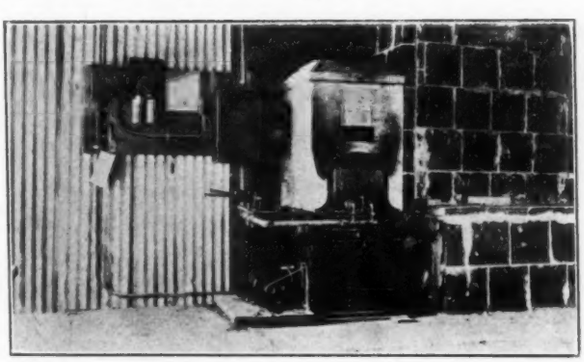
The California China Products Company manufactures nothing but fancy glazed tile, and it takes great pride in the quality of the tile which it makes.

For this installation a No. 3 Pacific Hot Air furnace made by the C. H. Sharp Manufacturing Company, of Los Angeles, Cal., was used. This will deliver 50,000 cu. ft. of air per hour at a temperature of 140 deg. Fahr. As this furnace is operated by a fan, making it possible to force air to any point desired, a main air duct was built along the back of the dry room with laterals to each chamber, into which was placed a damper for controlling the air.

In this main air duct was placed a Minneapolis Heat Regulator which was set for a temperature of 140 deg. Fahr., thereby controlling the temperature of the air in the main tunnel. A glass door was placed in the main tunnel directly in front of the heat regulator, which with the aid of an electric light installed in the tunnel keeps the thermometer in plain view at all times.

As a safety device, a no-voltage release coil from a 10 hp. motor starting box was used. This is connected to a gas valve so that, if for any cause whatever the current is shut off and the motor stops, the valve on the gas line closes shutting off the gas, thereby avoiding overheating the furnace or wasting gas.

When the power comes on again the motor starts up and the no-voltage release coil opens the gas valve and the furnace starts operating again.



GAS-FIRED FURNACE USED TO PROVIDE HEATED AIR

Equipment Absolutely Fool-Proof and Automatic

By the use of the heat regulator and safety device this apparatus is positively fool proof and automatic, thereby eliminating all labor with the exception of oiling the motor and fan bearings which is done twice each day.

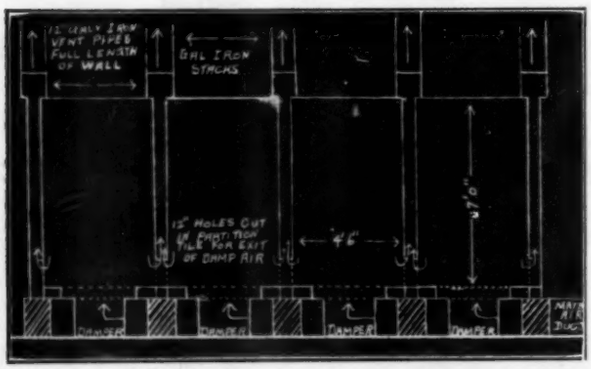
The dry room is divided into four chambers, each chamber independent of the other and holding 3,250 tile 6 x 6 x ½-in. Each tile weighs approximately 1 lb. and contains 10 per cent of moisture. The pallets on which these tile are placed are built in such a way that the air is forced up between and around the tile to the top of the room and then down and out the vents near the floor thereby making the air absorb all the moisture possible.

The accompanying illustrations show clearly the construction of the dry room and arrangement of heating

apparatus. The floor space consumed in drying by the old steam boiler process, consisting of a 20 hp. boiler and steam pipes laid on the cement floor was 2,555 sq. ft. The cost per month for running the steam boiler was approximately as follows:

1 night man—$2.75 per day—30 days	$82.50
Half the time 1 day man —$3.00 per day—15 days	45.00
1 day man cleaning boiler once every two weeks	3.00
Oil consumed—73 gal. per day at .04—28 days	81.76
Total cost of operation	$212.26

The cost of repairing boiler—new tubes, etc., is not



VENTILATION PROVISION ALONE AN IMMENSE ADVANTAGE OF NEW INSTALLATION OVER OLD

added, but it usually costs $100 for labor in removing one boiler and substituting another. This occurred about twice a year.

The delay in drying ware was also quite costly.

The average capacity of the old dry room was 1 kiln per month or in other words the factory made one kiln of biscuit tile every month and it was necessary to expend in the neighborhood of $212 per month to get this ware dry.

Lack of Ventilation in Former Drying Room

A point to be considered with the old system was that the presses were continually making fresh wet tile and as the large dry room had practically no ventilation the length of time required to dry a stack of tile was two weeks, and the boiler was kept running to dry out one small pile of tile, the remainder having been dry some time.

There was no way to dry small batches of tile, while with the new system any amount of tile can be dried as each chamber is independent of the other, and only four days' time is required to dry them as against two weeks with the old system.

Assuming that the dry room is in operation for 31 days the gas bill will amount to approximately $50 or $1.67 per chamber of tile.

1 kiln = 9 chambers of tile or $1.67 × 9 = $15.03.

Comparing this with $212, the cost of drying one kiln of tile by the old process, we find a saving of $196.97 or 92.9 per cent.

Another point for consideration is that the floor space required by the old method was 2,555 sq. ft. whereas the new mthod uses less than 500 sq. ft. or a saving in floor space of 79.7 per cent, the remainder of the space now being used for other purposes.

The saving shown is still more remarkable when one stops to consider that artificial gas at $1 per 1,060 cu. ft. is used.

The accompanying figures on cost of operation and saving made are exactly as given us in a letter from Mr. Keeler, superintendent of the California China Products Company.

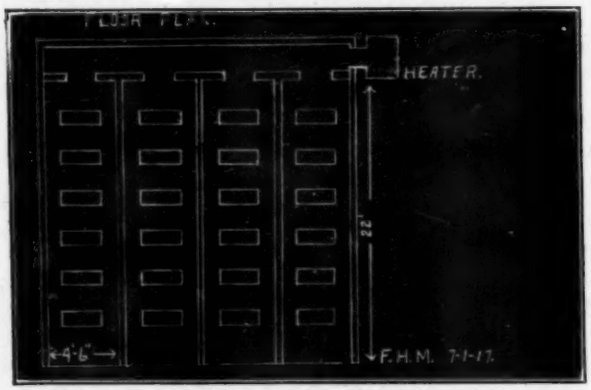
Principal Problem in Department Store Lighting Is to so Design Lighting as to Promote Sales

W. F. Little and J. F. Dick Recount Findings Made in Casual Survey of Eight Department Stores in New York City

In the course of a rather casual survey of illuminating intensities, observations were made with the aid of a "foot-candle meter" on various floors and in various departments of eight large stores in New York. An exhaustive illumination test was not intended. No correction was made for the age or deterioration of the lamps, or condition of glassware. Some of the measurements were made in the winter months and others in the summer months and most of them during business hours.

W. F. Little and J. F. Dick have presented the findings, some of which are as follows, in a paper prepared for the correspondence convention of the Illuminating Engineering Society.

At the time of the investigation the general level of



LAYOUT OF DRYING ROOM PERMITS ECONOMICAL DRYING OF SMALL CHARGES

illumination intensity in the larger New York department stores was of the order of 4½ ft. candles, ranging for the several stores from a minimum of 1½ to a maximum of 7½ ft. candles.

There is a considerable tendency toward the use of a single fixture in the center of each bay and units of large area with high candle-power lamps. The totally enclosing, or covered, unit is used in the majority of cases, and where not used a number of complaints were noted in regard to the necessity of frequent cleaning. Many of the large bowls, more or less hemispherical in shape, are equipped with either opaque or translucent covers designed to act as reflectors.

With very few exceptions, an entire floor is lighted by general illumination without any assistance from smaller local units. In fact, only in cases such as shoe departments and millinery departments, etc., where the directional as well as the quantitative element is important, is local illumination found. In spite of the use of a uniform general lighting system, the ratio of maximum to minimum intensity in most cases is found to be very low; and only where large fixtures with low

mounting heights are found is the variation in intensity excessive.

The distribution of light from the several lighting units varies considerably among the different stores. Installation practice differs also. In consequence, the uniformity of light distribution varies.

From the conventional illuminating engineering point of view, some of the differences in illumination intensities among various floors of some of these stores seem unreasonable. The authors, however, have not studied the department store lighting problem as such, and are unable to say whether some of the more notable differences exist by design or otherwise. It would be interesting to learn, they suggest, for example, whether or not in department store lighting it is regarded as desirable to illuminate white goods departments to a much higher intensity than furniture and rug departments. In several stores, departments such as the furniture and rug prefer a low intensity, and their reason is that neither furniture nor rugs show to their best advantage under a high illumination. This opinion seems quite general among the department store managements. The general practice for basements, consisting of a number of departments, seems to be the use of direct lighting fixtures.

After all, the principal problem in this class of commercial lighting, they state, is so to design the lighting as to promote sales. But little information is available on the relation between lighting and sales.

The authors desire to make it clear that they do not wish to imply that intensity of illumination is the sole index to the quality of the lighting in department stores. As in all other illuminating engineering work, color, diffusion and direction of the light are important, as well as the appearance of the lighting installation.

Can the Yield of Benzol Derivatives Be Improved by Carbonizing Coal at Lower Temperatures?

English Opinion and Tests Indicate That It Cannot—Best Means of Obtaining Increased Output Is by Encouraging Increased Use of Gas

By NORTON H. HUMPHRYS

If any commercial commodity can be said to experience the ups and downs of life, coal tar is a notable example. For fifty years the only method of utilization was for rough painting of fences or pig sties, and the bulk was run to waste. If the tar well was leaky, so much the better, and the soil around an old established gas works is usually found to be black with tar.

Now a National Necessity

The practical development of benzol extraction, by Mansfield, and of the aniline dye industry, by Perkin, led to the establishment of tar distilleries, but the process was slow, and the produce largely in excess of the demand, so the market for crude tar was entirely at the mercy of the distillers. Endeavors to reduce the output, or to use at any rate some of the surplus for fuel or for making gas, did not meet with any pronounced success, and it was not until a compartively recent date that the large demand for tar asphalt for yards, footways, and highways, together with its use for tar-spraying, improved the market prospects. The war has proved its apotheosis, raising it to the proud position of a National necessity.

After spending a century or more in endeavors to promote more extended utilization, or to reduce the production to vanishing point, gas engineers are now seriously advised to consider means of increasing the make per ton, even if the yield of gas is prejudiced. And propositions for the low temperature carbonization of carbonaceous minerals that contain so much ash that they are commercially useless in the ordinary sense, are in the air.

A reduction of retort temperature will undoubtedly increase the bulk of the liquid products, but this does not necessarily mean an increase of the yield of benzol derivatives free from an appreciable percentage of paraffins, which constitutes the present day requirement. The low temperature tar may contain a quantity of paraffins, sufficient to render it practically useless, as purification is difficult and costly.

A lower carbonizing temperature in the gas works means handling larger tonnage of coal, with a pro rata increase of labor, and retorts under fire; indeed, it is doubtful whether there is sufficient available apparatus in Great Britain to maintain the present output under such altered conditions.

Biggest Product Per Retort Made at High Temperatures

John West has conclusively shown, in the columns of the *Gas Journal* (British), that the production of tar per retort is greatest under high temperatures.

Working on a large scale, with a coal of inferior quality containing a large proportion of mineral matter, he found that the maximum make of tar was obtained at a working temperature of 1400 deg. C. At 1160 deg., or 1000 deg., the yield per ton was increased, but the quantity of coal that could be handled at the lower temperatures was reduced to such an extent that the production per retort fell off to the extent of 30-50 per cent.

A communication to the *Journal of the Society of Chemical Industry* from Mr. Winmill, research chemist to the Staveley Coal & Iron Company, is not encouraging, so far as the prospect of utilizing hitherto valueless material is concerned, because 50 per cent or so of ash in the retort residue means no salable solid fuel; and the position is far from being so acute as to render the value of the liquid products equal to the cost of working.

The experimental apparatus comprised a cast-iron retort, 2 in. thick, capable of taking a charge of 8 cwt. The shape was that of a vertical cylinder with domed ends, and a helical stirrer or mixer was provided. It was heated by atmospheric gas burners, and the gas was led into hydraulic main, condensers, and scrubbers of the usual pattern. Experience showed the necessity of a dust collecting chamber, as even when the paddle was only revolved twice in three minutes, a cloud of fine dust was carried over with the gas. It was found extremely liable to spontaneous combustion, after some minutes' exposure to air.

The material selected consisted of an inferior or bastard cannel containing 20-30 per cent of ash. Analysis of the dry ash free material indicated a composition intermediate between bituminous and cannel coal. It contained 80 per cent of carbon, 6 of hydrogen, 10 of oxygen, and 4 of nitrogen and sulphur.

The working temperature was 500 deg. C, length of charge 3½ hours, during which a vacuum of 26-28 in. of mercury was maintained in the retort, and the products comprised 6000 cu. ft. of gas similar to ordinary

town gas, 30 gal. of tar, and ammoniacal liquor yielding 35 to 40 lb. of sulphate. About half the make of gas was required to maintain the heat of the retort.

Best Way to Increase Use of Gas

The tar from one ton of material contained 100 lb. of pitch, 50 lb. of semi-solid wax, 4 gal. of soda-soluble oil; 1½ gal. phenolic ethers, and 6½ gal. of hydrocarbon oil, which consisted of unsaturated compounds and polymethylenes, but no benzol derivatives.

The separation of individual members was not easy, and it obstinately retained ammoniacal liquor, the sulphur from which contaminated the earlier distillates. It commenced to boil at 150 deg. C, and gave fairly equal fractions, specific gravities ranging from 0.794 to 0.910, for equal increments of heat up to 360 deg., at which temperature only about 5 per cent residue remained. The gas contained no appreciable quantity of oil boiling below 150 deg. Even the higher boiling oils were no use as lubricants, and the only value of the mixture was that of fuel.

These details prove that the low temperature distillation of inferior fuels is not a profitable operation, and that the liquid products would not pay the working expenses. The cost of purifying the oil is considerable, and the soda-soluble matters do not include carbolic acid. A few tests on "cracking" in a small way, by passing the vapors in contact with coke at a temperature of 800 deg. C., did not encourage further attempts.

Other evidence to the same effect might be quoted, and the best means for securing a maximum yield of suitable tar at present available, are the encouragement of the use of town gas for every purpose to which it is suited, the retaining of high working temperatures, and avoidance of low temperature carbonization.

Bringing the Human Interest Element Into Gas Advertising

Advertisements That Appeal to a Particular Brain Cell in Such a Way That Reader Absorbs Lesson Without Realizing He is Reading an Argument for Gas

By LOUIS RESNICK

Those eight words form the key to the success of the advertising manager of the Peoples Gas Light & Coke Company of Chicago—John F. Weedon.

In the newspaper world "human interest" is a highly technical expression and the ability to create it is the everlasting goal. The reason for this is that "human interest" will "put the story over" when the facts themselves will not. Let this not be interpreted as an intimation that "human interest" and "faking" as it is known in the newspaper game are synonymous. Far from being a distorter of the facts, the human interest writer is the one who says what he has to say in such a simple way that the message connects at once with the particular heartstring or brain cell for which it was intended and thereby causes the reader to *think, resolve* and *act* long before an ordinary narration of the same facts would.

Such a writer is John F. Weedon, who, in addition to handling all the advertising of the Peoples company, is also editor of "The Advance Club News," a magazine issued semi-monthly by the employees of the company, who number in the thousands. The A. C. News is the dog for Mr. Weedon's innovations in advertising and if an idea is not torn to shreds after appearing in the News, then it is fed to the general public through several score of newspapers and magazines, including perhaps thirty foreign language publications.

Recently Mr. Weedon gave the dog several big doses, in each of which the principal ingredient is "human interest," and each of which is intended to bring new gas consumers or to increase the gas consumption of old patrons.

In one trial he uses the lettering "Gas for Lighting" in white lettering against a rectangular red background. In the middle of the field is a white star. Below is enclosed a rectangular space of equal proportions enclosed in red lines. This is printed as a color sight test. The reader is asked to gaze intently, in a good light, on the star in the red field for a full minute; then to look quickly into the white field. If his color sight is normal, the words will appear in red letters against a green background. Following this are such admonitions as:

"There are more color blind, purblind, half-blind, wholly-blind, near sighted and short sighted people in the city to-day than ever before.

"The main reason is IMPROPER ARTIFICIAL LIGHTS.

"A bright light or a white light is not necessarily a good light. Generally it is a very bad light in its effect on the eyes.

"The AMBER GLOW GAS LIGHT is the only scientific safe light for home use.

"We are rapidly approaching a season of long evenings which you will have to while away with reading, writing, studying, working and playing. Do what you will you have got to use your *eyes*. Get some EYE INSURANCE. Install AMBER GLOW GAS LIGHTS, NOW."

In another corner of the paper we find this: "WHAT IS THE COLOR OF YOUR LUNGS?"

And then the writer goes on to tell a little story that sounds more like summer reading than a gas advertisement. The story follows:

I was in a hospital laboratory the other day and my curiosity prompted me to inquire what part of the human anatomy was a certain dirty looking piece of meat which lay on a dish. It was the color of an old shoe.

I was told it was a "lung." Now, I have always been of the impression that the color of a human lung was a sort of baby pink, and I mentioned the fact to my informant.

Well, you are right, said he. A lung should be pink, but this is a Chicago lung. The lung of a baby, or a person from the country who has always breathed pure air, is pink. Naturally, when one breathes the dirt and dust and smoke of the city continuously the lung becomes discolored.

It occurred to me at the time that if that punk lung could be exhibited alongside of a perfectly clean pink one it would form a most potent argument for the abolition of the smoke nuisance. Perhaps the high price of coal, in so far as it leads to the substitution of smokeless gas for dirty fuel, is a blessing in disguise. Fouling the air we breathe is an offense against public welfare that should be considered as seriously as polluting the water supply.

On another page there appears the picture of a man sitting before an open coal grate fire and the underline: SEEING YOUR FORTUNE IN THE FIRE.

The advertisement reads:

"Did you ever sit before the glowing embers in a coal grate and try to 'see your fortune in the fire?'

"If you burn coal this winter you won't have to try very hard. Your fortune will be in the fire all right.

"The situation, however, is easy to beat as far as open grates are concerned. If you have an open grate install a ————."

And then the advertisement goes on to tell the virtues of a gas grate fire—Efficiency, Attractiveness, Economy.

In each of these advertisements the appeal was primarily to that something in the human constitution that demands "human interest" for gratification.

The reader of such advertisements does not realize that he is reading an argument for gas until the argument is swallowed. Once swallowed it is digested and either a new or a better gas consumer is created.

The reader of such advertisements reads with an open mind. He has not the prejudice that often enters the mind of the reader of an "out and out" gas advertisement. The man who is in the market for gas will hunt up the gas advertisement. But the gas advertisement must hunt up the man who SHOULD BE, yet is not in the market for gas. It is the latter type for whom advertisements are to the largest degree intended and that is the type that reads the "human interest" advertisement when he would not read an ordinary narration of the facts.

Test Removes Uncertainty as to Quantity of Air Rotary Pump Will Handle

Cost of Operation Varies With Vacuum—Guesswork Eliminated in Selection of Pump Size for Heating Service

Vacuum pumps handle a mixture of air, water and steam. The proportions of the three constituents vary to such an extent that a pump of the velocity of centrifugal type can not be used. For if only air vapor with very little water should enter the pump it would lose its vacuum. Consequently, a pump of the displacement type must be used. In the past, piston pumps have served for this purpose, but recently rotary pumps have taken their place. The Roots Company, of Connersville, Ind., originators of the Roots blower, have brought out a pump which is well adapted for this service on account of the straight sides of the impellers. There are no pockets in which water can be tapped; in this feature the Roots pump, it is claimed, differs from all other rotary pumps. In addition to this feature any slight amount of water slipping back between the impellers finds no surfaces against which to impinge, so that the impellers show no wear whatsoever.

The selection of the size of these pumps for heating work has heretofore been done altogether by guesswork. First, it is difficult to determine how much air enters the system; and second, nobody knew how much air the pump could handle. The second uncertainty has been removed by a test which Professor Trinks of the Carnegie Institute of Technology recently made on a small Roots Pump.

The test equipment is shown in Fig. 1. The pump with air chamber discharge stands in the foreground. A constant head bottle for admitting sealing water to the pump is plainly visible. In the center of the apparatus is a vacuum tank from which the pump takes the air. In the rear is the air-measuring tank which is equipped with standard nozzles of various sizes. Back of this tank is seen a table carrying electrical measuring instruments for measuring the power consumption of the pump, which was driven by a calibrated electric motor. The reason for the use of such cumbersome testing equipment is interesting.

If the air passing through the pump had been admitted directly through a nozzle at the pump inlet instead of passing through two tanks as it does now, the pulsations of the pump would have caused the nozzle to show a greater quantity of air flowing than actually does flow. With the present equipment, not only do the two tanks smooth out the vibrations, but they absolutely eliminate them by the use of a thin rubber diaphragm on the right hand tank which is equipped with the inlet nozzles. By lightly touching the diaphragm one can easily satisfy himself that the diaphragm is working, even with the rapid and comparatively slight pulsation of the pump.

Gate Valve Regulates Air Admitted to Pump

The amount of air admitted to the pump is regulated by a gate valve between the two tanks. The tanks were tested for leaks by being filled with water.

In order to duplicate as much as possible the condi-

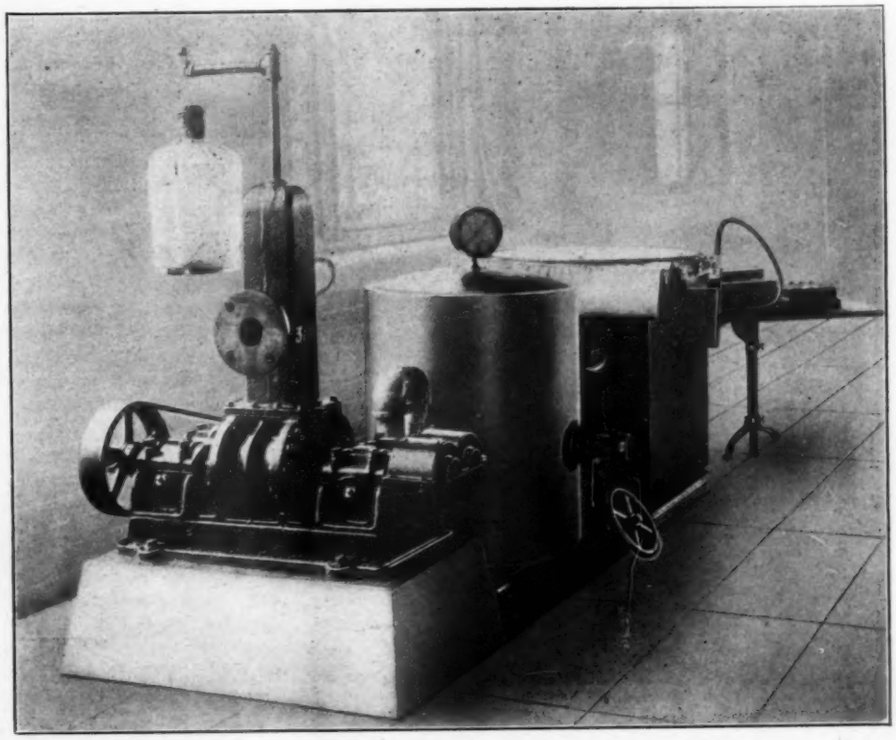


FIG. 1. TEST EQUIPMENT SHOWING AIR-CHAMBER DISCHARGE, VACUUM TANK AND AIR-MEASURING TANK

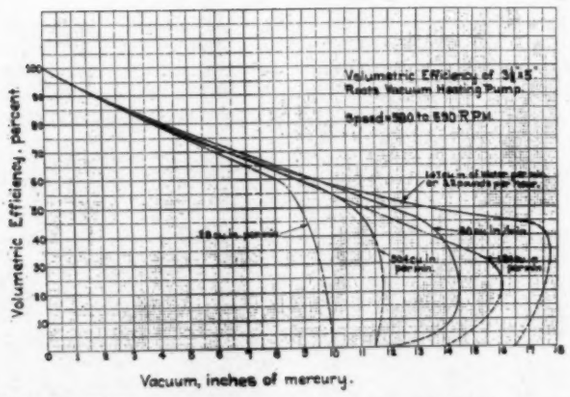

Volumetric Efficiency, percent
Volumetric Efficiency of 3½"x5" Roots Vacuum Heating Pump.
Speed=580 to 530 R.P.M.
141 cu. in. of water per min. or 33 pounds per hour.
Vacuum, inches of mercury.

FIG. 2. SHOWS THE QUANTITY OF AIR DETERMINED BY THE VACUUM WHICH CAN BE MAINTAINED BY THE PUMP.

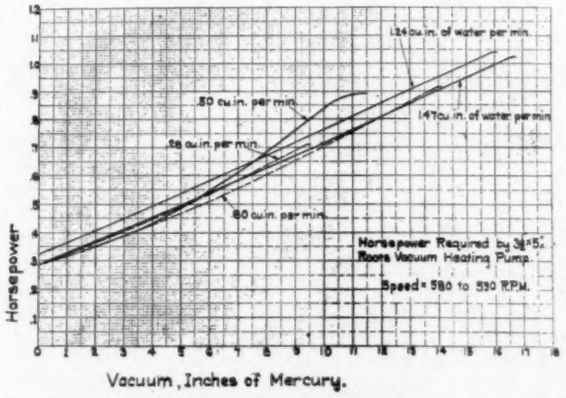

Horsepower
124 cu. in. of water per min.
80 cu. in. per min.
141 cu. in. of water per min.
58 cu. in. per min.
60 cu. in. per min.
Horsepower Required by 3½"x5" Roots Vacuum Heating Pump.
Speed=580 to 530 R.P.M.
Vacuum, Inches of Mercury.

FIG. 3. SHOWS THE POWER CONSUMPTION OF THE PUMP UNDER VARYING CONDITIONS.

tions existing in heating service the pump, in the test, was supplied with some water for sealing purposes. As previously mentioned, it flowed to the pump under constant head from a bottle which is shown in the illustration. At the first the action of the pump was found to be very erratic. It would alternately hold and lose the vacuum, so that a test with a given constant vacuum seemed impossible. It was soon found that the trouble lay in surging back and forth of the sealing water. A check valve was placed in the suction line near the pump and immediately the trouble disappeared. In practice the surging never occurs, because a check valve is provided anyway for several reasons.

The quantity of sealing water which is necessary for maintaining the vacuum was found to be very small. It never reached the amount represented by a small stream. It always left the bottle in drops. The quantity of air determined the vacuum which can be maintained by the pump as will be seen from Fig. 2.

The more water admitted, the higher is the vacuum which can be maintained by the pump. The illustration gives the volumetric efficiency as a function of the vacuum and of the quantity of sealing water. By volumetric efficiency is meant the ratio (in per cent of the quantity of air actually delivered to the quantity which would be delivered under ideal conditions.

At no vacuum, there is no slip and no heating of the air passing from the pump so that the volumetric efficiency equals 100 per cent. As the vacuum increases the volumetric efficiency drops on account of slip and heating, the rate of drop depending upon the supply of heating water. It is somewhat difficult to duplicate the actual working conditions of a heating pump in a test, because in practice the pump hoists as a mixture of air, water and vapor.

Power Consumption Determined

Fig. 3 shows the power consumption of the pump under varying conditions. It will be noticed that the power varies almost in a straight line with the vacuum. A very careless operator can considerably increase the power consumption by tightening the stuffing boxes considerably. This is, of course, true for any rotating machinery, and particularly for small machines where the power of a man at the end of a wrench is quite great compared to the size of the machine.

The pump has been eminently successful in heating service and also in other fields, such as paper mill work where a vacuum of 10 to 20 in. with a discharge head of 5 or 10 lb. is required.

Report on the Production of Bituminous Coal Compiled by the Geological Survey

Little change occurred in the ratio of tonnage produced to full-time capacity during the week ended September 15, as compared with the two weeks immediately preceding. The index for all mines reporting since the weekly statistics were first undertaken was 72.3, a figure almost identical with that for the week of September 1 (72.0). The index for the intervening week (74.8) can be accepted only with qualification because of the unequal observance of Labor Day remarked in the last bulletin. Iowa, Alabama and the Southwesteren states recorded increases. The Winding Gulf region of West Virginia recovered from the depression of the week before. A strike in the Central Illinois field depressed the index for the state from 76.5 to 71.5. The continued operation of the priority order was noticeable in the returns from Ohio and Western Pennsylvania, raising the index in the latter region to 83.5 per cent of the present full-time capacity—the highest level it has yet attained. The strike in the Southern Appalachian field remained unbroken.

In the following week (September 16-22) the total production of the country, as indicated by railroad shipments, fell off nearly 5 per cent. One hundred and fourteen roads which originated 93.75 per cent of the total rail shipments in 1916, loaded 183,000 cars in the week of September 22, as compared with 190,867 during the preceding week. Shipments fell off in every district presented in the accompanying table. The decrease was especially marked in Pennsylvania and Ohio, and in Illinois, Indiana, and Western Kentucky.

Mines reporting causes of lost working time produced 77.9 per cent of an aggregate full-time capacity of 4,408,000 tons per week. Of the 21.9 per cent of the full operating time lost, 9.8 per cent was attributed by the operators to car shortage, 8.0 to labor troubles, and 3.0 to mechanical disability at the mines. The relative importance of the several causes limiting production, it will be noted, approximates that for the week of September 1. Lack of demand was serious in Oklahoma alone where certain mines are still declared unable to operate under the present scale of prices.

This report was prepared by C. E. Lesher, of the Geological Survey, Department of the Interior.

Converting Existing Smoke-Houses to Gas

Shrinkage of Meats Usually Great Where Wood or Coal Fire is Used—Saving Effected through Minimizing This Loss by Using Gas Will Pay Back Cost of Equipment in Very Short While

By GILBERT C. SHADWELL

The largest packing-house in the world has been partially converted to gas. You cannot convert an acknowledged expert of *any* subject against his will. There must be a reason.

There is. That gas is better is not enough—it is no more complete an answer than to say that apples are better than oranges. Perhaps apples are better than oranges, but for what purpose? For purifying the blood, for profit in growing them, for simplicity in transport, or for what?

The general answer that gas is better is but a poor reason if you are trying to sell it to any industry. The only way to get at the real answer is to know something about the industry you are trying to sell to.

The gas man does not have to be an expert in the industry, for if this were the *sine qua non* each industrial gas salesman would be able to qualify for president of every factory he visited. On the contrary, the gas man does not have to be an expert in each industrial line, but he must know the general ideas involved in the lines of work of every industry where gas can possibly be used.

However, this is not difficult of attainment, for the guiding principles are throughout generally the same within broad limits.

Gas is best for smoke-house operation for the following (among other) reasons:

1. No attention is required to the replenishment of fuel.
2. The control is very easy.
3. There is but little over-ventilation and thus comparatively little lost heat.
4. Blast burners can be used where secondary air is only available in sparse amount.
5. Perfect combustion for heating is assured.
6. Greater speed, higher net efficiency, less labor costs and more hygienic results are obtainable.
7. The shrinkage of the meats is less.
8. Spoilage is negligible.
9. Gas can be used even in the largest smoke-house with economy.

Existing Smoke-Houses—The Problem

Smoke-houses are made in so many styles and sizes that it is not very easy to lay down hard and fast rules as to their operation nor their design, but both points will be dealt with.

Generally speaking, existing smoke-houses, constructed of brick, steel, concrete and other substances, are made in one or two-story compartments (not including the smoke-generating chamber below). Sometimes three stories are used, but this is rare.

The sizes vary all the way from about 4 ft. wide by 6 ft. deep up to about 12 ft. wide by 14 ft. deep, and even larger. The height, of course, depends on the number of stories and on other considerations which will be dealt with.

Portable smoke-houses are usually constructed of metal and a general idea of their constructioin and utilization was given in an article by the writer in the American Gas Engineering Journal for June 30, page 625, on the subject of the preservation of foodstuffs. Their size seldom exceeds a capacity of more than 100 cu. ft. actual working space. Such smoke-houses are usually provided with a gas consumption capacity of about 2 cu. ft. of gas per hour per cubic foot of working space.

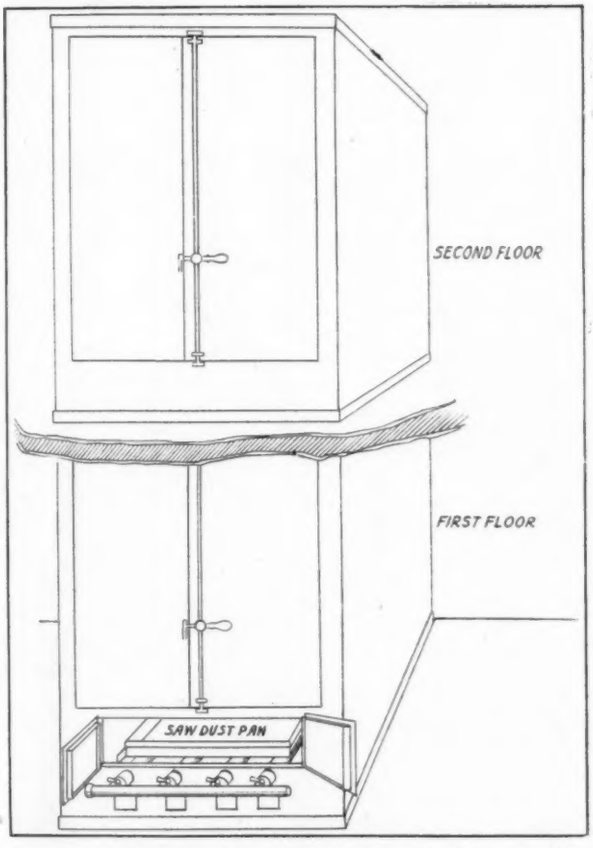


FIG. 1. DIAGRAMMATICAL ARRANGEMENT OF DOUBLE-STORY SMOKE HOUSE AFTER CONVERSION TO GAS.

Regarding stationary smoke-houses these are usually constructed of brick as part of the main packing-house building. They have a lower floor, or ash pit, above which is a grating forming the working floor of the smoke-house proper.

If the house is properly constructed the cost by using gas as compared with the old-time method of coal, coke or wood will be less per unit of finished product. With gas, meats can be smoked at a loss in weight of from only 6 per cent for hams to 7 or 9 per cent for sides or bellies. Moreover, any strength in color, etc., can be far more easily obtained by gas than by using any other fuels.

Naturally, as practically every smoke-house is different in size, draught conditions, etc., great care has to be

taken in estimating how much gas to use in each instance in order to bring about the desired results.

The old-time method of smoking meats, etc., with wood or coal has so many disadvantages that gas has been steadily superseding these other fuels for several years past.

Paramount Importance of Heat Control

In order to smoke any particular food substance, it is necessary, first of all, to dry it at a definite temperature, depending on its nature. The drying process is sometimes carried out in the smoke-house, but if greater speed is required or if the nature of the product demands it, heated air at any desired temperature or rate of delivery may be obtained from a gas-operated air-heater.

This type of air-heater has been developed after long experience and is specially recommended, as with it absolute control of the temperature is rendered most easy. Moreover, the drying properties of the heated air delivered with this appliance deserve particular attention, as it is possible to dry meats or any substance in the dampest weather as perfectly as on the driest summer day and in but a fraction of the time.

The effect of drying meats, etc., is to enable the exterior moisture to be driven off and to cause the cells of the product to expand to the extent of removing the required amount of water from them.

Drying at too high a temperature will cause the cells to burst, thus spoiling the product as well as bringing about an undue amount of shrinkage and waste and often complete softening. This is particularly true of fish and similar products.

Although taking a longer time, the preliminary drying may be carried out by the aid of part of the burners of the smoke-house. No smoke is given off during the heating, sawdust being added at a later stage, for which purpose hickory or ash is generally used. The meats, etc., are only ready for smoking when dried to the required extent (see table below). Cured meats show a glazed appearance when dried.

Table Showing Smoking and Cooking Data

Name of Product	Smoking Hours	Smoking Temp. (deg. Fahr.)	Cooking Hours	Cooking Temp. (deg. Fahr.)
Long Bologna	3	145–150	½	150
Large Bologna	3	145–150	2	160
Round Bologna	2	135–140	½	155
Bag Bologna	1	140–145	2	160
Bologna in Weasands	4	185	¾	155
Knoblauch	1–1½	130	½	160
Leona Bologna, long	3	145	¾	155
Leona Bologna, large	3	145	2	160
Frankfurts	2½–3	130–135	1/10	160
Vienna Frankfurts	3	140–145	1/10	160
High-grade Frankfurts	3–3½	150–160	1/10	160
Tongue	1–2	65–70	2	200
Liver	1–1½	110–120	½	160
Polish	3–3½	150–160	not cooked	
Minced Ham	3–3½	135	4	150
Berlin Ham	5	130–140	2	170
Cooked Dressed Ham	5	130–140	2½	180
Cottage Ham	32	120	not cooked	
Boneless Ham	48	120	not cooked	

After drying, the rest of the smoke-house burners may be lighted and the temperature raised to the figure shown in the foregoing table. The cells of the meats being opened to the required amount, the smoke becomes absorbed by them in about the time shown in the table.

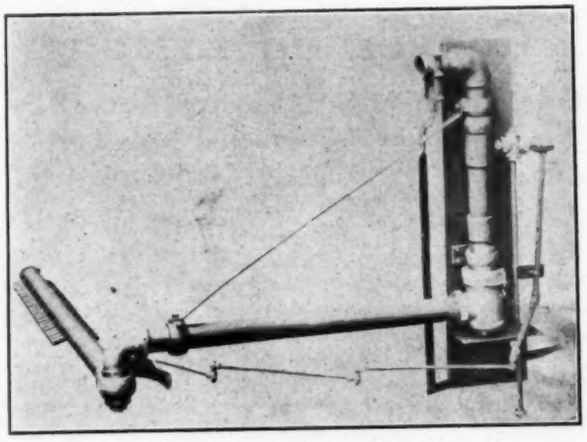


FIG. 2. SUCH A FAN BLAST BURNER AS THIS MAY BE EMPLOYED WHERE ATMOSPHERIC BURNERS CANNOT BE UTILIZED

The shrinkage of meats is usually very great where a wood or coal fire is employed, the practice in such cases being to light a fire in the smoke-house till drying has been accomplished. This may take six or more times as long as with gas. After this hardwood sawdust is thrown on to the fire and this produces the smoke.

Minimum Shrinkage Only Possible Where Gas Is Used

It will readily be understood that a uniform temperature by such a method is impossible, as it is also impossible to control the heat. As a consequence certain of the meats lose their flavor, others may become "puffy," and again some will drop off their hooks on to the floor and be spoiled.

The minimum of shrinkage is only possible where gas is used as, with it, proper control is obtained. It is thus evident that gas equipment will pay for itself in a very short while, due to the saving in shrinkage alone.

Apart from this, however, greater cleanliness, ease of control, increase of speed of operation and ability to carry out the work in any weather are all items of the utmost importance to the butcher or packer. Moreover, after smoking has been started it is only necessary to look at the thermometer occasionally, and the smoking takes care of itself.

In a word, gas means that you have an insurance policy against loss of products besides all its other advantages.

Figuring Gas Capacity of Burner Equipment

The method of figuring the gas capacity of the burner equipment for a smoke-house practically resolves itself into an ordinary house-heating problem. All that is necessary is to determine the quantity of heat to warm the smoke-house and after that the heat necessary to warm the contents (namely, the meats, etc.).

A temperature of 170 deg. Fahr., however, should be considered practically a maximum, as, if too high a temperature is employed, the meats will shrink unduly and the products spoil, or at any rate be wasted in a large degree.

Of course there is always a difficult factor to be considered and that is that the "charge" or load of meats varies very considerably. Packers are no respecters of heating laws and one time may have only a small charge and at another time will load the house "brim-full."

It is important, therefore, to get some idea as to how they work in this respect before making a definite recommendation.

Experience is a valuable asset in deciding how much gas to burn, but cannot be always relied on to determine the exact results.

For instance, supposing we have a smoke-house 12 ft. by 14 ft., consisting of two stories, the writer would consider a burner capacity of about 700 cu. ft. per hour about right if the house were normally situated, normally loaded and built of average brick construction. Again, if the case was one where the house measured 6 ft. by 8 ft., one story high, 300 cu. ft. per hour might be a fair figure.

As mentioned above, it is not desirable to trust to guesswork on figuring the gas capacity. Therefore a formula such as the following should be employed. This formula is designed for house-heating and data in connection with it is given in full, but it may be modified for smoke-house use as described later:

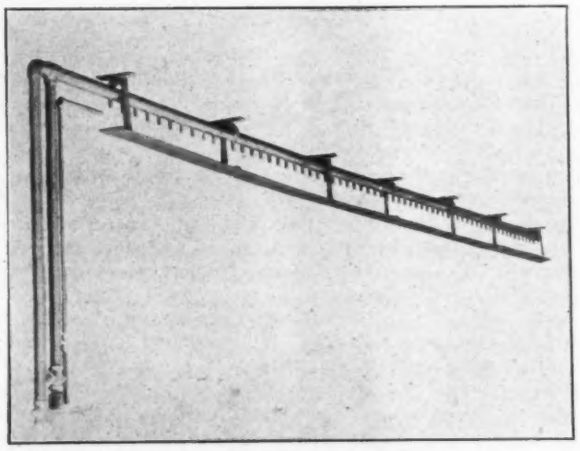


FIG. 3. SHOWING SMOKE-HOUSE BURNERS INVERTED.

$$\text{Cubic feet of gas per hour} = \frac{[(C \times N \times 0.02) \times G \times W] \times T}{\text{B.t.u. value of gas per cu. ft.}}$$

in which:

C = Cubical contents of room (in cu. ft.)

N = Number of changes of volume of air per hour in room.

0.02 = the B.t.u. to heat 1 cu. ft of air per degree Fahrenheit. Actually this constant is 0.018 at ordinary temperatures, but for general purposes 0.02 is sufficiently accurate.

G = Heat loss in B.t.u. by glass area per hour (not necessary to be included generally in smoke-house calculations).

W. = Heat loss in B. t. u. by walls per hour.

(Note: Other losses, such as floor, roof, ceiling, should be added where they apply.)

T = Difference in temperature between incoming air and temperature to be maintained in room.

The values of above will vary for different types of buildings as follows:

N = Number of changes of air per hour depending on use of interior. This may be about 2 to 5 in our case.

G is somewhat variable. The square feet of glass area is multiplied by the coefficient of heat transmission for glass per degree Fahrenheit per hour, which gives loss in B.t.u. per hour for glass area. Coefficient of heat transmission for glass is as follows:

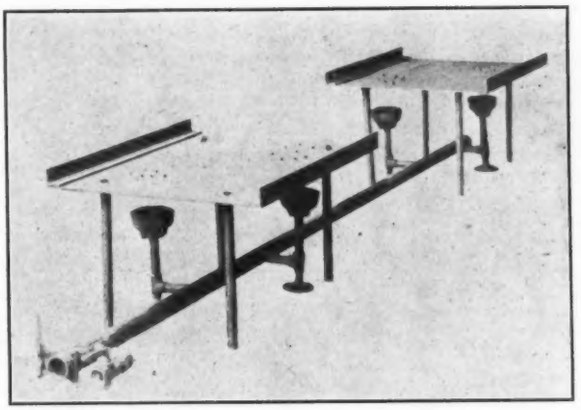


FIG. 4. BLAST BURNERS GIVE BETTER RESULTS WHEN UPRIGHT WITH BAFFLE ABOVE THEM.

Single window (1/8 in.) dry = 0.96; wet = 1.10
Double window (1/8 in.) = 0.41
Single window (1/4 in.) = 1.06
Double window (1/4 in.) = 0.51

W also varies with the character of the walls, so also will loss from roof, floor, doors, etc. The areas of these must be first determined, then multiplied by the coefficient of heat transmission for the different surfaces, and the result will be the B.t.u. lost per degree Fahr. per hour.

Other coefficients of heat transmission are as follows:

Wooden walls—exposed to outside	
Without Plaster	0.31
With Plaster	0.20
Partitions	
Plaster on one side	0.49
Plaster on both sides	0.36
Tile with plaster	0.30
Plaster on metal lath	0.34
Floor and Ceilings	0.25
Roofs	
With ceiling	0.22
Without ceiling	0.42
Doors	
¾ in. thick	0.55
1 in. thick	0.48
2 in. thick	0.34
Masonry, concrete and brick walls	
(These vary with construction, thickness, etc.)	
12 in. Brick Wall	0.31
12 in. Masonry	0.54
12 in. Concrete	0.48

and about 0.01 less for each additional 1 in. in thickness.

T varies with the adaptation. 10 per cent should be added for north or east exposure.

The above figures are based on 100 per cent efficiency and should be modified in accordance with the equipment employed.

Description of a Typical Portable Smoke-House

Portable smoke-houses are usually provided with two sets of burners—one set at the sides and another set under a sawdust pan. The side burners give heat to the house, whereas the pan burners provide the necessary smoke. Hence both heat and smoke can be adjusted to any points, independently, as required.

The smoke-house is so designed that smoke may be sent either through the meats or deflected into a flue at will. Sausage meats, etc., may therefore be left hanging in the house without getting more smoke than is required.

A special device prevents any smoke from escaping

into the room when the smoke-room door is opened. This is accomplished by a set of shutters which close over the sawdust pan when the door-handle is raised to open the door. This allows the smoke to pass directly into the chimney. A thermometer is recommended in all cases. This may be fitted to front of door.

Type of Burner Equipment to be Installed

The reader will now have some idea as to the type of burner equipment to be installed when converting an existing smoke-house to gas. The gas consumption, having been computed as explained above, it is necessary to supply such burners as will operate to best advantage in the particular smoke-house under consideration.

Generally speaking, in small smoke-houses, properly designed pipe burners evenly spaced beneath the working floor will give exceedingly good results. If they are used they should be inverted so that when saw-dust is shoveled on, the burner ports will not become choked. In any case, there is usually not much danger of this occurring, as any sawdust which might settle on the ports would usually be quickly burnt out.

The sawdust need not be burned by the inverted flames from the burners thus arranged, but can be ignited by means of a small luminous flame burner fed from the manifold and run down on to the ash pit floor. The sawdust will smoulder throughout its bulk and thus produce the requisite smoke which will be absorbed into the cells of the meat.

Fig. 1 shows diagrammatically the arrangement of a double-story smoke-house after it has been converted to gas.

In certain cases atmospheric burners cannot be utilized, usually because but little secondary air can be admitted for combustion. In such a case a type of fan blast burner such as that shown in Fig. 2 can be employed, or other modifications can be utilized, as will be explained shortly. Fig. 3 shows the burners also inverted, but it is doubtful, in the writer's mind, if such a burner should be so installed. There is every indication that better results are obtained by having a blast burner arranged upright with a baffle above it. This particular group is arranged for positive pressure air blast of about 2 lb., although in smoke-house work fan blast of 1 oz. or 2 oz. air pressure is usually all that is required.

But, however satisfactory such blast equipments may have proven in certain isolated cases, they have been almost entirely superseded in general by the modified arrangement shown in Fig. 4 Such a smoke-house heating and smoke-generating equipment meets a very large number of the problems involved in the conversion of the larger brick smoke-houses to gas.

In these smoke-house burner equipments a plate, having holes above the burners in it, is mounted on legs (not fastened to the burners). Sawdust is shoveled on to this plate which becomes heated by the blast burners beneath it.

In operating this appliance, the burners which are lighted by a pilot, heat the smoke-house. After the house has been heated and the meat is dried off, the sawdust can be shoveled on to the plate.

The perforations in the latter allow the sawdust to burn evenly.

Ashes can accumulate at the bottom without interfering with the operation of the burners as the appliance stands up off the base, and being raised off the floor the burners can be seen in operation.

If the circulation of the air in the house is unlikely to be good, naturally, a fan may be placed in the ceiling and operated by a bevel gear and shafting from the outside.

The flue damper should be closed to a far greater extent, generally, when gas is used to what is usually the practice when using the older fuels.

The following are typical of the sizes of these equipments:

Plate Dimensions				Gas Cons. (cu. ft. per hr.)	
Length	Width	Thickness	No. of Burners	W. Fan Blast	W. Pos. Blast
4′–0″	2′–0″	¼″	4	175	200
6′–0″	2′–0″	¼″	6	250	300
8′–0″	2′–0″	¼″	8	350	400
10′–0″	2′–0″	¼″	10	400	500

There are many other modifications, and it is strongly recommended that every smoke-house installation be made most strictly on its individual merits.

If atmospheric pipe burners cannot be used, and if blast is essential, be careful to put the problem up to a well-known manufacturer. There is no such thing as a good, all-round equipment. Each case requires a separate solution.

Cured Meats

Cured meats should firstly be soaked to remove surplus salt. They should then hang till they stop dripping. After this the smoke-house should be warmed by the outer burners to the required temperature (115 deg.) till dry.

These two operations may be hastened without impairing the qualities of the meats, etc., by using an air-heater. After the meats are dried the sawdust may be shoveled on to the pan and the center burners lighted, the temperature being caused to rise to 118 deg. Fahr. in ten or twelve hours. Sweet pickled meats should be smoked 24 to 36 hours.

The meats should be allowed to cool off thoroughly after smoking by opening the ventilator. After this they should be handled as little as possible.

Dried Beef should be dried thoroughly. This will take 24 to 36 hours if dried in the smoke-house, or the time may be materially reduced by means of an air-heater. After this the beef should be heavily smoked and then cooled. It should not be handled for 24 hours after smoking, if possible.

"Puffy" meats are caused to become so by smoking before the meats are thoroughly cured. This causes decomposition when heat is applied.

It is certainly not possible to consider the subject complete without a discussion of the treatment of the smoked meats when preparing them for the table. The boiling of hams, etc., on a large scale is usually carried out in a tank furnace.

Boiled Hams should soak at about 165 deg. Fahr. for two hours to remove surplus salt. They should then be cooked at 160 deg. Fahr. for four or five hours in a tank furnace, and then cooled off in the water in which they are cooked. This enables them to re-absorb some of the weight lost in cooking. After this they should be dried at 118 deg. Fahr. in the same manner as cured meats (see above) or smoked lightly. Hams shrink less if cooked *before* smoking.

The U. S. Department of Agriculture gives the following data on ham boiling, which will be of assistance in this connection: Wash the ham thoroughly, then soak

in cold water several hours, the time varying with the size of ham. This soaking is to dissolve out the excess of salt. The ham is then put in a tank furnace full of boiling water. The temperature should then be lowered slightly and the boiler just kept simmering. Keep the water just barely boiling for 4½ hours for an 18 lb. ham—that is ¼ hour for each pound of ham. Always keep tank furnace full.

How the Gas Companies are Helping the Nation

THE FORT PLAIN GAS & ELECTRIC LIGHT, HEAT & POWER COMPANY, serving Fort Plain, N. Y., a small company employing only two regular operators, has invested $1,000 in 3½ per cent Liberty Bonds and contributed $50 to the Red Cross. A. D. Sheffield is president of the company.

THE TROY GAS COMPANY, serving Troy, N. Y., bought $50,000 of Liberty Loan 3½ per cent bonds and subscribed $1,000 to the Red Cross fund. Employees of the company purchased $5,000 worth of Liberty Bonds through the company and subscribed for additional bonds through other sources. H. C. Shields is vice-president and general manager of the company.

THE GULF STATES STEEL COMPANY, of Alabama City, Ala., employees, outside of the office force, purchased in excess of $20,000 worth of bonds. In addition to this they subscribed $10,150 in cash to the Red Cross fund. On both Liberty Bonds and Red Cross subscriptions there was a very limited time in which to do anything. The Red Cross fund was taken in one day and the Liberty Bond subscription was accumulated in one-half day. So far the company has lost in the military and naval services by enlistments and draft 127 men, and it has on the pay roll at present 92 men who are subject to draft. This Journal is not in position to state just what was done along these lines at the various mines and other properties of the company. The policy of the company has been, and will be, to make no claim for industrial exemption for any of its employees who may be drafted. A. L. Conner is works manager.

THE CENTRAL HUDSON GAS & ELECTRIC COMPANY, of Poughkeepsie, N. Y., subscribed $29,700—$15,000 for the company and $14,700 for employees—to the first Liberty Loan. Red Cross subscriptions amounted to $1,000. Fourteen employees have entered the military and naval services. The Young Lady Employees' Club is furnishing boxes of food, tobacco, magazines, clothing, etc., to the drafted men of the company.

GARDNER ROGERS, who was made general manager of the Blackstone Valley Gas & Electric Company, Woonsocket, R. I., as stated in a personal note of the Jan. 13 issue of the AMERICAN GAS ENGINEERING JOURNAL, and who is chairman of the Public Service Committee of the Kiwannis Club, called a meeting at the gas company's office recently. Plans were discussed for a fitting send off for the third increment of the draft army from Woonsocket, which was to have taken place shortly.

THE DOHERTY COMPANY, with the second Liberty Loan campaign getting under way, is already doing something to help in the work of selling the great war loan. The Federal Reserve Bank of New York, which is organizing the Liberty Loan Committee for the New York reserve district, had to get out 15,000 letters, each different, in about three days. They communicated with Wallace E. Smith, manager of the New York office force of Henry L. Doherty & Company, and Mr. Smith volunteered to have the stenographic department do the work for the Federal Reserve Board. This help is being given to the Liberty Loan Committee at the expense of Henry L. Doherty & Company. The letters—15,000 of them—go to men all over the New York district asking them to serve on the Liberty Loan Committee of their respective towns. As different names are mentioned in the body of each letter, it was impossible to print a form letter.

To get the great volume of letters through in so short a space of time, the stenographic department had to work until late at night. In addition to doing this work for the Liberty Loan Committee, the stenographers also did their regular work for the staff of the New York office.

Local Newspaper Holds No Brief for Gas Companies, But Advocates Fair Play

The *Queens County News* comments on the change in standard hearings now under way in New York City as follows:

"For several months the Public Service Commission, First District, has had before it for consideration the question of a change from candle power to heat units for the measurement of gas. The heat unit standard is now in effect in all parts of the state, with the exception of New York City. Three hearings have been held before the commission. The testimony shows that the commission has really changed the case into one of rates. The gas companies have introduced evidence to show that at no time has it cost as much to manufacture and distribute their commodity as at the present time and at the prevailing price of 80 cents their business is being conducted at an actual financial loss. There is one thing certain—while everything else that the public uses has soared, gas has remained stationary. Gas companies are to be called upon by the United States Government to furnish millions of dollars' worth of toluol and other by-products for ammunition purposes, without any profit to the companies. The Government will permit of no financial profits, but must have the tuluol at cost price. This should be borne in mind by the commissioners. We hold no brief for the gas companies, but the question of 'fair play' stands out prominently in this instance.

"Our advice to the *News* reader is, 'Don't waste the gas. Use all you need, but don't burn any unnecessarily.'"

Merchants Demonstrate Need of Better Street Lights

To quietly demonstrate the need of improvement in the street lighting system in the business district of Winston-Salem, N. C., many of the merchants recently cut out lights in their windows, leaving only the ancient carbon arc lights to illuminate those streets. The result was most forceful, and those who saw it realized the importance of some action being taken to give the city the light that is needed, both in the matter of police protection, and in the interest of civic pride.

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No Facilities for Gas Lighting in Apartment Buildings

Builders of the apartment buildings wherein large proportions of the populations of the large cities live are no more prone to make unnecessary expenditures than other classes of business men. Thus we find a good part of the buildings of this class constructed in recent years have provision only for electric lights. It is true the buildings are piped, for as yet the gas range is considered a necessary adjunct to such dwellings, but in not one of the rooms is there an outlet to which a gas lamp might be attached. To provide such outlets additional expense would have to be incurred. The builders do not figure that the rentability of the apartments will be diminished to a sufficient extent to warrant the extra expense. For the prevalence of this view and for the degree to which experience has indicated to the builders that their reasoning is correct the gas companies are solely and entirely responsible.

A prospective tenant comes to view a new apartment. The general situation is pleasing. He notices the absence of gas lighting outlets, and it is possible that up to the present he has used one or two gas lamps solely on the basis of economy. He would prefer to do likewise in the new location, but, then, one cannot have everything as he would like it in this world. And the sacrifice of his gas lights is about the slightest sacrifice he can make. Bear in mind that the only advantage of gas lighting he has been educated upon is that of relative economy, and what he knows about that he has probably picked up himself. Then, too, his lighting bill, regardless of the illuminant he uses, is a comparatively small item in his living expenses. From a dollar and cents standpoint it does not matter very much whether he uses gas or electricity. The other features of the apartment please him. He leases it, and the business sagacity of the builder is tacitly indorsed. He has saved a few dollars on the cost of his building and has lost nothing by it.

There is need of extensive publicity for gas lighting, not based on the principle of direct sales, but, on the principle of education. The public should be informed of all the advantages of gas for lighting as we know them, particularly that which is applied to the welfare of the eyes. It should be shown clearly that the lack of facilities for using gas for lighting is not so insignificant an item as might appear.

Gas service is not nearly so likely to interruption as electric service. Yet even where gas is used, if an alternative is economically practical, surely no one would say that to provide against contingencies is not a wise course. Especially is this so with regard to electric service. Also there is the remote possibility of present-day conditions. We cannot see, from the present outlook, any restrictions as to the amount of lighting used such as have been put into effect in Europe. But it is not beyond the realm of possibility. And if

either gas or electric supplies are curtailed we can be assured that the curtailment will not begin with the former.

The apartment builder who does not provide facilities for the use of gas lights for his prospective tenants is not fulfilling his moral obligations to them. The public which provides these tenants should be thoroughly educated as to this fact. If the gas companies affected took it upon themselves to provide this education the builders would not be long in getting into line.

Need of an Adequate and Efficient Index to Current Gas Literature

A great fund of information of value to the gas man is published every month in a wide range of periodicals, some of them directly pertinent to the industry, others only remotely so. Manifestly it would be impossible for the average gas man to find the time to even glance over all of them to locate each of the articles that would have a value to him. Yet he should know that the information is available and where he can find it. The solution is an adequate and efficient index to current gas literature, prepared solely from the user's point of view without the suspicion of partisanship and without regard to the desires or demands of any publisher or publishers.

There is a lack of any such index in the gas field today. The closest approach to it in the matter of keeping the gas man in touch with current items that appear in the general field is the abstracts published every two months by the American Gas Institute. These loose-leaf collections leave nothing to be desired from the editorial standpoint. They are strikingly non-partisan and a keen insight of relative values is apparent throughout. But these, as the title indicates, are abstracts. Instead of merely listing an article they digest it. Thus their scope is limited to a much greater degree than would be the case with a mere index.

The Industrial Arts Index covers gas matters quite thoroughly. But it also covers other industries. Thus the gas man cannot locate the articles relating to gas with the ready facility that he could in the case of an index devoted exclusively to gas.

That the task of compiling such an index would be great cannot be gainsaid. We have mechanical engineers, chemical engineers, chemists, civil engineers, metallurgists, advertising specialists and what not. The range of publications that would necessarily need to be covered stretches out in a very long line.

Obviously it is a task that could best be undertaken by one of the National gas associations, probably to the best advantage by the American Gas Institute. Its secretary being a veteran gas engineer with a known record of attainment, and having besides a wide familiarity with other branches of the business, would be well equipped to exercise supervision of the work in hand.

It could not be expected, nor in fact would it be desirable, that the present headquarters staff of either of the associations would be able as constituted to handle the whole of this work. More than mere librarian insight would be necessary in selecting the articles to be listed. Each department should be handled by one who has a thorough knowledge of the subject dealt with, and what is new and what is as old as the hills.

For instance, some one might discover at this late day that cement could be used with excellent results under certain conditions to make joints in cast iron mains and write an article on it. Some overworked editor, though knowing the idea was old, might take it for granted that some new development was contained in the manuscript and publish it. The average librarian would not look beyond the heading and the chances are that the article would be listed in the index thus destroying in part its whole object. A live distribution man, however, would be more skeptical.

Such men are plentiful in the industry, in manufacture, in lighting, in industrial fuel and all branches. At least one of them, if requested, would voluntarily undertake the handling of at least one section of the index. It would fall upon the headquarters staff to organize the work, to get to the different indexers the publications likely to contain the class of articles in question and to attend to publishing details.

On the whole, it is a service that is very much needed in the industry, so much so, in the opinion of this journal, as to warrant serious and prompt consideration as to ways and means.

Too Busy to Answer Inquiries

"I would like to give you the details you seek," replied a gas man to one of this journal's representatives, "but the publication of an article of that kind would bring so many requests for information as to how to accomplish this or that task that we would either have to pay no attention to them or be seriously hampered in our own work. It would be a case, either of making bad friends or sacrificing the interests of the company."

Is this statement not an index of the changed conditions in the newer gas industry? There has been a time when consulting service and advice was freely and gladly exchanged among the several companies.

It is true that in a way this practice was greatly to the advantage of the smaller company and to the disadvantage of the larger. The former was willing to render assistance, but the help or suggestion the larger company could obtain from it was practically nothing. But the spirit was an excellent one, nevertheless; a spirit of self-sacrificing helpfulness that did much to solidify the organization of the gas industry and which undoubtedly was responsible in great part for its vast growth up to the present time.

But then the industry was not as large as it is now.

Its interests were not so diversified. Working days were longer and the time of the individual was not so much at a premium.

The same spirit of willingness to help others exists to-day, but it demands the right to render this assistance in the most efficient manner. The man who made the statement we have quoted has no desire to withhold any helpful and constructive information his experience may have brought to him. But he does desire to avoid the necessity of time after time having to repeat the same story in answer to individual inquiries. He has been in an especially good position to acquire a broad knowledge of a branch of our business concerning which there has not been sufficient information available to enable the industry to develop to the best advantage. He is ready and eager to impart whatever information he may possess to the field at large. But he wants to be sure of reaching the greatest number with a minimum expenditure of his own time. He has examined and appreciates the value of the technical gas journal as a means to this end. As a result he plans to transmit the information his experience has brought him through the columns of this journal.

The industry cannot be without a means of exchanging beneficial information. It has grown too large and its interests too diversified for the individual letter method to be practical. But it has not yet recognized its bigness. It cannot be said that it has utilized to the full the advantages the journals offer as a means to that end. There is too much of a tendency to regard the matter of gathering and transmitting the information that is a necessity to the gas man as the sole responsibility of the editorial staffs of the various journals.

This is a mistaken viewpoint. It exaggerates the importance of such staffs to the industry.

As a matter of fact the personnel of the editorial staff of a gas journal is of relatively little importance so long as it is competent and alert. The main responsibility for the degree of value the gas journal may attain lies directly upon the shoulders of the industry it serves. If the industry will not co-operate in the way of supplying information the gas journal must of necessity be a valueless thing indeed.

Gas Plant Superintendent Becomes Steamfitter

A former superintendent of a gas plant, out of a position and "down in his luck," so as to speak, obtained a position as a steamfitter on naval base work. This journal learned of his situation and about the same time received an inquiry from a gas company seeking a works foreman. The offer was one hundred dollars a month and house. It was declined. The man is making over fifty dollars a week in his present position.

"It seems strange to me," he protests, "that companies desiring the services of a good, practical man offer such low salaries when the ordinary mechanic can get from fifty to sixty-three cents an hour for his time, with time and a half for overtime, yet a gas man has to be a mechanic in several lines, working all kinds of hours."

It does not seem strange to us, however. We have the advantage over him in that we attend rate cases and follow local newspaper comment when the gas companies come before commissions seeking rate increases.

It has become the fashion to find fault with the companies themselves in regard to the relatively low rates of compensation so general in the industry. When the company sits passively back, craven enough to strain every effort to struggle along on the rates it had in normal times, without making an aggressive effort to obtain the rates that will enable it to conduct its affairs on a business basis, the AMERICAN GAS ENGINEERING JOURNAL is content to follow the fashion. But in most cases the deplorable condition is due to that small part of the public which is the most clearly heard; the ignorant, demagogue type with some axe of its own to grind.

And the public has been fortunate. Running along as they are, not earning a return on their investment that even the demagogue concedes is their due, gas companies have continued to render good service. The public has not had brought home to it the fact that no industry can furnish a better product than the funds at its disposal enable it to produce.

How long this can continue no one can say. Good men have remained with their companies up to this time from force of habit and a loyalty bred in the knowledge that when their companies were able they dealt justly with them. But even these factors cannot hold them indefinitely. Men must eat, and a good proportion of those not in military service have families to support. Manifestly, if steamfitters make more than works foremen, eventually we must expect to have in charge of gas works men of a lesser degree of aptitude than that of the steamfitter. How this will effect service can be easily imagined.

If an automobile manufacturer continued selling his product at the same figure that it sold at three years ago and tried to tell us it was the same quality car, we would instantly stamp him a liar. Yet gas companies, while they have been affected in the same ways and to as great or greater degree than the automobile manufacturer, are continuing at the old selling price, and if they do not furnish the same excellent service they are pilloried as malefactors.

Gas Engineers Wanted in the Army

The Empire State Gas & Electric Association has received a letter from Major Atkisson, Corps of Engineers, to the effect that a gas and flame regiment is to be organized for early service abroad. Among the commissioned personnel required at once are: 6 captains, 22 first lieutenants, 12 second lieutenants.—*Bulletin.*

News of the Gas Industry

City Attorney Declares Chicago Prevented Increase in Gas Rates by Change in Standards

Apparent Increase in Some Bills Due to New Ordinance Making Each Meter a Separate Account—Company Encouraging Use of One Meter to Pass All Gas

A campaign, the twofold purpose of which is to show the people of Chicago how to reduce their gas bills and at the same time clear away the confusion connected with the operation of the new gas ordinance, has been started by the public service department of the municipal government and the Peoples' Gas Light & Coke Company of Chicago. The gas company and the city government have to contend not only with the general misunderstanding of the complicated ordinance which authorized the company to reduce both the price and the candlepower of its gas, but with the situation created by a small section of the daily press, which is endeavoring to convince the public that the company and not the consumer will profit from the new ordinance.

Some idea of the problem confronting the gas company may be had from a paragraph in a letter from Donald R. Richberg, attorney for the city in gas litigation matters, to Alderman T. J. Lynch, chairman of the Council Committee on Gas, Oil and Electric Light.

The change in price authorized by the new ordinance, from a flat rate of 80 cents per 1,000 cu. ft. to a sliding scale of 75.5 cents for the first thousand to 40 per thousand for all over 50,000 ft. used per month, went into effect Aug. 1, and the change in standard of the gas, from 670 B.t.u. to 565 B.t.u., became effective October 1. At the same time the candlepower of the gas is reduced. How the latter change will accrue to the interest of the consumer who takes advantage of the company's offer of free mantles is explained by Attorney Richberg in his letter to Alderman Lynch, in which he says:

RATE INCREASE PREVENTED

"Gas mantles furnish twice the light at half the cost of open flame burners. Mantle lights mean cheaper and better light. A mantle given good care will last long enough to save much more in gas than the cost of the mantle. The cost of mantle renewals has been cut in half by the ordinance. Junior mantle renewals used to cost 20 cents. The ordinance now makes the charge 10 cents. Burning gas without mantles is just as wasteful as burning candles.

"The cost of making gas has increased so enormously that it was a case of increase the rates or cut down the candle power. The new ordinance does not make gas cheaper for the consumer, but the

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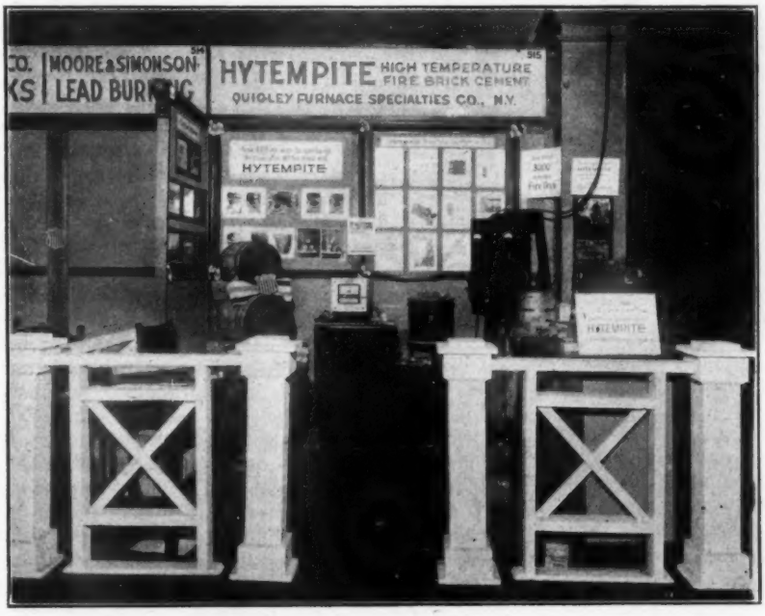
National Exposition of Chemical Industries So Closely Allied with the Gas Industry that Many Gas Men Derive Much Benefit

Three Floors in Grand Central Palace, New York, Occupied by Most Successful Exposition Ever Held by the Chemical Industry

The steady stream of visitors at the National Exposition of Chemical Industries, held at New York during the entire week of September 24-29, showed the keen interest which centers upon the Chemical Industry, especially at this particular time. Manufacturers of products and materials used in the making of gas displayed many materials of vital interest to the gas fraternity.



QUIGLEY BOOTH SHOWING COUNTER AT RIGHT, WHERE HYTEMPITE DEMONSTRATION TOOK PLACE.

Obviously, it would be impossible to describe each of the booths in such limited space, but a few have been selected as being those which are most essential to the gas interests.

THE QUIGLEY FURNACE SPECIALTIES COMPANY, of New York, at their booth gave a practical demonstration of what Hytempite can do in the way of repairing firebrick and acting as a binder. A small wooden tile-form was filled with crushed firebrick which had been mixed with Hytempite and the plastic tile then transferred to an electric furnace, heated to about 2,400 deg. Fahr.

THE "SALT TEST" METHOD OF TESTING PYROMETERS EXHIBITED BY THE BROWN INSTRUMENT COMPANY.

When taken out this hardened tile thoroughly bound attracted considerable attention.

The BROWN INSTRUMENT COMPANY, of Philadelphia, gave some particularly valuable information to many gas men who were not familiar with the exact means of testing pyrometers. This was the "Salt Test" method, described more fully elsewhere in this issue, which brought forth much favorable comment. Their demonstration concentrated for the most part on the Brown high-resistance pyrometers, but the stationary electric pyrometer, the portable electric pyrometer, the recording electric pyrometer and the radiation pyrometer, all made by the Brown Instrument Company, were displayed to good advantage.

A large map of the United States, dotted with red spots, from the Atlantic coast as far west as Colorado, completely covered the rear of the H. KOPPERS COMPANY booth. The Koppers Company is located at Pittsburgh, Pa. The map was designed to show the growth of the company and each red spot, numbering thirty, marked the town or city at which Koppers coke ovens are in operation. At each point the name of the plant appeared and the number of ovens in operation. The largest installation of its kind in the world, according to the official in charge of the booth, was marked at Clairton, Pa., at which 640 Koppers ovens are operating at the Carnegie Steel Company's plant. Another very large set of ovens are now under construction at Sidney, Nova Scotia.

One of the officials of the NATIONAL ANILINE & CHEMICAL COMPANY, INC., of Buffalo, N. Y., in discussing their exhibit with a representative of the AMERICAN GAS ENGINEERING JOURNAL, expressed the company's deep indebtedness to the gas industry, which is really the very source from which this truly national company has built its enormous business. Their exhibit differed from many of the others, in that it contained the finished products or uses into which their products enter. Many yards of vari-colored cloth and skeins of thread produced by this company's dyes were on display. The entire output of one of their largest factories is devoted to helping produce khaki for Government uniforms.

At the SCHAEFFER & BUDENBERG MANUFACTURING COMPANY booth, whose factory and general offices are situated in Brooklyn, N. Y., many of the gas works men found a good display of pyrometers, recording thermometers, tachometers; and among the gauges were the "Columbia" recording, the "S. & B.," the "Schaeffer" and a series of syphon or "U" gauges. Some of the other products of this company are calorimeters, counters, engine registers, and thermometers.

Another booth containing measuring and regulating apparatus was that of the PRECISION INSTRUMENT COMPANY, of Detroit, Mich. A complete control board was on display, as well as the company's newly patented instrument, the Precision Calorgraph, which automatically and constantly records the calorific power of any gas, in gross or net heat units. This company's CO_2 recorder with its standard was also in prominence and attracted attention. In the rear of the booth was shown a gauge board with several types, among them two "3 in 1" draft gauges for reading drafts at the ash pit, combustion chamber and flue. Some of the other instruments featured were the steam pressure recorder, the steam pressure indicator, steam flow indicator and recorder, flue gas temperature indicator and recorder with clock. A complete line of "U" gauges was shown on another board; also a "2" pen recorder, "2 in 1" indicator, combined indicating and recording differential. This company also manufactures laboratory and test meters, a line of glass apparatus and Argon burners, at its Detroit factory.

The booth of the HARRISON SAFETY BOILER WORKS, Philadelphia, was interesting to the operating gas man from the standpoint of higher efficiency in the power plant. Their method of scientific treatment of boiler feed water was demonstrated by the representative in charge. The Sorge-Cochrane hot process method of softening boiler water is based upon the fact that water will soften in ten minutes at the boiling temperature to a lower degree of hardness than can be secured by the same number of hours at 50 deg. Fahr., the same softening reagents being used in each case. The Cochrane open-feed water heater and the Cochrane meter heater, which combines the functions of the water heater and those of a reliable feed water meter, were featured particularly at the display booth.

The novel equipment of the LIFE SAVING DEVICES COMPANY, INC., Chicago, Ill., exhibit attracted much interest. An air-tight enclosure was constructed with glass sides at one end. This was completely filled with sulphur dioxide and the demonstrator, after equipping himself with the life-saving breathing device, entered the enclosure through the door at the rear, and thus made a practical showing of the effectiveness of

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average rate for the same heating value is about the same as last year. The city council prevented an increase in gas rates by permitting a change in standards."

On the other hand, Mr. Abele announces that he personally investigated the operation of the new ordinance as it affected a certain large plant, and found that the gas bill last month showed a reduction of $3,000.

MULTIPLICITY OF ACCOUNTS

"One explanation for an increase in gas bills resulting from the new ordinance," Mr. Abele declared, "is a multiplicity of meters. Under the new ordinance, each meter is recorded as a separate consumer. A business concern might have four meters and in the past might have paid one rate, the readings being combined. Now, with four meters, the charge will be according to the amount used through each meter, and not based on the joint consumption of the four. The remedy for this is to have all the pipes connected with one meter, and the gas company will co-operate in this work."

Mr. Abele said that about 100 times as many complaints reached his office concerning the minimum charge of 30 cents as concerning any other phase of the new law. This charge is justified in Mr. Abele's opinion.

"The complaints are practically all from office buildings," he said. "The minimum charge was provided to cover the expense of investment, bookkeeping, reading meters, etc. I investigated a large office building the other day. There were 800 meters and the majority of tenants were not paying 30 cents a month for gas; some did not pay $1 a year. The company, however, has to keep a record of each meter, send a man around each month to read each meter, and send the bills, etc. I do not believe that 30 cents will cover that expense."

Boston Consolidated Files Schedule of Manufacturing Costs

In accordance with the requirement of State law, which provides that the company shall annually publish, in September, a report showing the cost of gas in the holder, wages, distribution, depreciation and maintenance, the Boston Consolidated Gas Company issued its statement on September 28.

This showed that 2,895 million cu. ft. of gas were purchased and 4,153 million cu. ft. were manufactured, during the year to June 30. Of this total of 7,053 million, 6,793 million cu. ft. were sold.

Unit costs of manufactured gas were:

	Per 1,000 cu. ft.
Wages at works	$0.0285
Coal and coke, in gas mfgr	.0955
Coal, coke, etc., in making steam	.0135
Enriching materials	.1077
Purifying materials	.002
Water	.0014
Stable and laboratory wages and other expenses at works	.0084
Total operating expense	$.2570
Deduct residuals made	.0015
Net operating expense	$.2555
Repairs and maintenance	.0137
Total cost in holder	$.2692

The costs of purchased gas were:

Average purchase price per 1,000 cu. ft	$.2828
Purification and storage expense	.0112
Total cost and operating expense	$.2940
Maintenance and repairs of storage and purifying plant	.002
Total cost in holder	$.2960

The average cost in the holder of all manufactured and purchased gas was 28.02 cents per thousand feet, and of all gas sold, 29.09 cents.

Distribution costs and general expenses were: for distribution wages and expenses, 4.32 cents; maintenance and repairs of distribution system, 3.47 cents; general expense and management, 7.07 cents; taxes and insurance, 7.56 cents; total, 22.42 cents.

The cost of maintenance and repairs for 1,000 cu. ft. sold were:

	Per 1,000 cu. ft.
At works	$.0084
Of services and mains	.0198
Of meters	.0091
Of distribution works and holders	.0058
Of storage and purifying plant	.0009
Total	$.0440

The total costs are thus summarized:

Cost of manufactured and purchased gas, per 1,000 cu. ft. sold	$.2909
Cost of distribution and general expenses	.2242
Total cost (excluding depreciation and reserves)	$.5151

Massachusetts Gas Companies Seek Approval of Higher Rates

Hearings on proposed increases in the price of gas will be held by the Massachusetts Gas & Electric Light Commission, as follows: Cambridge Gas Light Company, at Boston, Oct. 8; Newburyport Gas Light Company, at Newburyport, Oct 9; Malden & Melrose Gas Light Company, at Everett, Oct. 10; Amesbury & Salisbury Gas Company, at Amesbury, Oct. 11.

The Cambridge company proposes to increase its price from 80 to 90 cents; the Malden company from 90 to 95 cents; Newburyport from $1.25 to $1.50, and Amesbury from $1.50 to $2.

Other gas companies that have recently petitioned the Massachusetts Commission for authority to increase their prices are, with proposed increases: Citizens' Gas & Electric Company, Quincy, $1.10 to $1.20; The Otis Company, Ware, $1.50 to $1.75; Old Colony Gas Company, Weymouth, $1.25 to $1.40; New Bedford Gas & Edison Light Company, 80 to 90 cents; Suburban Gas & Electric Company, Revere, 90 to 95 cents; Lowell Gas Light Company, 85 to 95 cents; Pittsfield Coal Gas Company, $1. to $1.10, and in Lee and Lenox to $1.30; Salem Gas Light Company, $1 to $1.10; Brockton Gas Light Company, $1.05 to $1.15; Beverly Gas & Electric Company, $1.10 to $1.20.

Thirteen electric companies in the State have petitioned for sanction of proposed increases in the price of electricity, most of the increased desired being one-half cent per kilowatt hour on the maximum net power rate.

Gas Rebate at Philadelphia May Be Used for War Relief

Philadelphia Councils at the first regular fall meeting started a move to apply the 5-cent rebate which, under the agreement with the United Gas Improvement Company, will be paid back to the city on all gas sold after Jan. 1, 1918, to the relief fund for the families of soldiers and sailors.

Isaac D. Hetzell, chairman of the committee on relief, introduced a resolution to that effect in select council, and the question was referred to the finance committee.

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the apparatus, which is known better among gas companies as the trench device. This company also exhibited the lungmotor, which, as pointed out by the booth representative, is now taking the place of the pulmotor in many industries. As a special booklet, which they distributed, announced, the lungmotor was introduced to the medical profession three years ago, and the list of 4,000 installations in Government work, cities, institutions of every type, and companies, shows its universality.

The LEEDS & NORTHRUP COMPANY, of Philadelphia, were featuring in particular their optical pyrometer, which is used in observing temperatures in reheating, hardening and forging furnaces for temperatures up to 2,500 deg. Fahr., and their high temperature optical pyrometer for temperatures above 2,500 deg. Fahr.

PENNSYLVANIA SALT BOOTH SHOWING SIGN, U. S. SHIELDS AND SEVERAL BASKETS MADE OF CRYSTAL ALUM.

A busy booth, due to their many products, was that of the PENNSYLVANIA SALT MANUFACTURING COMPANY, of Philadelphia, Pa. On the rear wall hung three pictures of their plants at Natronia, Pa., Greenwich, Pa., and Wyandotte, Mich., at which are produced materials which enter into almost every manufacturing process and industry imaginable. Their goods may be classed under the general heads of acids, chlorine products, alums, sulphate of alumina, hydrogen gas, soda products, lye, heavier chemicals and refiners of gold and silver. A large sign containing the name of the company was entirely made of crystal alum, as were several attractive baskets and U. S. shields in color.

Much interest centered upon the display of instruments made by the TAYLOR INSTRUMENT COMPANIES, of Rochester, N. Y. The Tycos base metal thermo-electric pyrometers were given prominent display. These included the wall type pyrometer outfit for indicating temperature at one point, the portable pyrometer outfit and the recording pyrometer outfit for recording the temperature at one point. One of this company's newest instruments is the Tycos multi-pyrograph, for use in recording temperatures at six points, using six couples and having one recorder and one chart.

At the booth of the THWING INSTRUMENT COMPANY, of Philadelphia, Pa., a goodly display of pyrometer and recording instruments were shown, particularly adapted for recording temperatures of carburetors and superheaters in the manufacture of water gas. The multiple record recorders, manufactured by this company enable users to record temperatures of carburetor and superheater of one, two or three machines simultaneously. The Thwing operation recorder also records on a single chart from one to forty operations, all the pens being fed from a single reservoir. The speed of the chart and the frequency of record can be arranged to suit conditions.

The SEMET-SOLVAY COMPANY, of Syracuse, N. Y., exhibited a complete line of by-products from retort coke ovens. Among them were included many explosives, benzol, toluol, salicylic acid, oil of wintergreen and acetyl salicylic acid. The posters which formed the very attractive decorations of the booth were particularly unique in that they symbolized the uses to which their products were put; each poster, about 3½ x 5 ft., was framed individually and most artistically designed; one poster representing a large siege gun in operation, symbolized the part played by the Semet-Solvay Company in producing explosives, another showing a beautiful rainbow effect, represented the dyes produced by this company. Some of the others were a woodland scene, symbolizing the creosoting materials, while an autumn cornfield scene, the nitrate products produced by the company. There were several other similar posters not described here, and these, combined with the products themselves, made an instructive exhibit.

Along the entire rear wall of a good-sized booth the FOXBORO INSTRUMENT COMPANY, of Foxboro, Mass., displayed their numerous temperature recording instruments for power plants and factories. The Foxboro temperature controller was in evidence, and a particular demonstration was made on one of the company's new instruments called the Tapalog. Among some of the other instruments made by this company are the Foxboro electric long distance tachometers, portable tachometers, stationary tachometers and tachographs, recording hygrometers, low pressure recorders with "U" gauge, electric pyrometers, differential recording gauges and orifice meters for gas, mechanical electric time recorders, thermometers and recording and indicating pressure and vacuum gauges.

An automatic system of boiler feeding was concentrated upon at the booth of the CRANE COMPANY, of Chicago, Ill. A 5 hp. boiler was connected with the Crane auto-system, and was kept in constant operation, showing the gas men the ability of this automatic boiler feed to keep a constant level in the boiler without the need of attention. At the same time it keeps an accurate record of the amount of feed water delivered to each boiler, any varying temperature of the water not affecting its operation. The water of condensation is returned to the boiler at prac-

tically the temperature of the steam from which it is condensed, due to an absolutely closed system. The needed make-up water may be heated to the temperature of exhaust steam by first passing through a feed water heater. One of the features pointed out by the demonstrator is the fact that there is no operating cost, and therefore a large fuel saving. Many gas companies are becoming particularly interested in this apparatus, because by it they are often able to make more installations of gas-fired steam boilers.

Among the many instruments displayed by the BRISTOL COMPANY, Waterbury, Conn., Bristol's indicating electric pyrometer high resistance models were the most prominent. These instruments are furnished in two types, one having over 300 ohms resistance when used with Bristol base metal couples for temperature up to 2,000 deg. Fahr., and over 100 ohms when used with rare metal couples for temperatures up to 3,000 deg. Fahr. The other type has an even lighter movement and a higher resistance, this being generally furnished for laboratory test work and experimental purposes. The Bristol recording electric pyrometer furnished with a patented semi-transparent smoke chart also attracted considerable attention, as well as the Bristol electric pyrometer, with patented automatic compensator, the apparatus of this compensator being to automatically correct for changes of temperatures at the cold end of the thermo-couple, even if these temperatures vary from freezing to the highest temperature that might be found near the outside of furnace. The pressure recording gauges, recording thermometers and long distance recorders were among some of the other products displayed by this company.

The chemical distilling and refining apparatus displayed by the WALTER E. LUMMUS COMPANY, of Boston, Mass., was particularly interesting, as some of their complete apparatus, although very large in size, was on display. This company is the manufacturer of many types of distilling and refining apparatus, as well as being chemical engineers, with an experience of 24 years in designing and construction of many varieties of chemical plants. The apparatus made by this company chiefly interesting the gas man at this time is that used in the recovery of benzol, toluol, ammonia, etc., directly from retort oven gases, without the intervention of condensing and re-distilling operations. The Lummus continuous system for recovery of light oils and ammonia is reduced to simple elements of precoolers, absorbing towers, stills, washers and concentrators, capable of continuous or intermittent operation. With this system the partial retention of illuminating properties in the gas is within the control of the operator.

The CO_2 machine displayed by the UEHLING INSTRUMENT COMPANY, of New York City, created considerable interest, due probably to the present advanced cost in fuel. Among the other instruments made by this company and on display at the booth were the pressure recorder, draft recorder, draft analyzer, draft indicator and absolute pressure indicator.

The ARMSTRONG CORK & INSULATION COMPANY, of Pittsburgh, Pa., had many of the varying articles which they produce on display. The one holding the most interest to the gas man was the Nonpareil Insulating Brick, the essential qualities of it being low heat conductivity, convenient form for handling, sufficient strength to build walls and arches as found in furnaces, ability to withstand high temperatures, and moderate cost.

In considering thermometers, many gas men found an interesting display at the PRECISION THERMOMETER & INSTRUMENT COMPANY, of Philadelphia, Pa. They had on display many types, which are found in use at plants throughout the country. Some were graded down as low as 200 deg. C. and as high as 500 deg. C., and the Fahrenheit thermometers ranged up to 1,000 deg. The company also makes pyrometers, hygrometers and vacuum gauges.

Three types of carborundum protection tubes were displayed by the CARBORUNDUM COMPANY, of Niagara Falls, N. Y. These three grades are the refrax tubes, which are made from pure crystallized carborundum without any binding material, the silfrax A, which consists of graphite tubes, the surface of which has been converted into carborundum for a thickness of 1-32 in. to 1-16 in. The silfrax B tubes are made of pure carborundum, similar in composition to the refrax tubes, though of much finer crystalline structure. The carbofrax tubes are made of carborundum, bonded with highly refractory clay, and are suitable for temperatures up to 600 deg. C.

A respirator called Dustite, manufactured by WALTER SODERLING, INC., of New York City, was on display at one of the booths. Many operators called upon to handle coal and coke, took a considerable interest in this device as a means of promoting the health of those in their employ. This respirator has been tested and labeled by the Underwriters' Laboratories as having recorded a perfect test in a whirling cloud of Portland cement dust. It is made entirely of rubber and aluminum, the breath being taken in through a filter made of special material. This filter is used dry, and effectively stops the finest dust. As the demonstrator showed, the apparatus is simple and not uncomfortable for the worker.

Among some of the other large concerns whose exhibits gas men found interesting were the American La France Fire Engine Company, Inc., of New York City; the Barrett Company of New York City, the Beach-Russ Company, New York City; the E. I. Du Pont de Nemours Company, Wilmington, Del.; the General Electric Company, Schenectady, N. Y.; the General Chemical Company, New York City; the New York Revolving Portable Elevator Company, Jersey City, N. J.; the Prest-o-Lite Company, Indianapolis, Ind.; the Toch Bros., New York City; the United Lead Company, New York City; the Cast Iron Pipe & Foundry Company, Burlington, N. J.; the United Gas Improvement Company, Philadelphia, Pa., and the Westinghouse Electric & Mfg. Company of Pittsburgh, Pa.

Application Made for Minimum Charge for Toledo, Ohio

An application made to the Ohio State Public Utilities Commission recently by President J. W. McMahon of the Northwestern Ohio Natural Gas Company of Toledo, for permission to increase consumers' rates by adding a 35-cent readiness-to-serve charge to the present 35-cent minimum rate of the company, is looked upon as the first step on the part of gas companies to boost rates in Ohio.

Mr. McMahon said that the proposed increase, if allowed, would increase the company's revenues approximately $175,000 a year, which would add just that much to the consumers' cost for gas. If a consumer used 35,000 cubic feet of gas in a month, the proposed increase would make the rate 36 instead of 35 cents.

New Gas Rates at Providence, R. I., Suspended Until Further Hearing By Commission

It is considered improbable that the new gas rates announced by the Providence (R. I.) Gas Company for Providence, Cranston, East Providence, Riverside, North Providence and other territory served by it, will take effect for some time.

The company sought permission from the State Public Utilities Commission to make the rates effective Oct. 1, but at a recent hearing so much time was occupied by statements in behalf of the city of Providence and for the gas corporation that none of the representatives of other places served by the company had opportunity to voice their feelings on the matter, and the Commission adjourned the hearing until Oct. 2.

At that time, it is expected, more evidence will be presented. President John R. Freeman and the other gas company officials will present a statement in rebuttal of the declarations made by Public Service Engineer Robert L. Brunet, and Mr. Brunet and the lighting committee of the City Council will have an opportunity to consider the detailed written statement of the gas corporation. After this the Public Utilities Commission will have to consider the evidence at length before rendering its decision, and men versed in such procedure say that it will be surprising if the new rates can be made effective before Nov. 1, if then, providing they are approved, and many question whether any such increase as has been sought will be granted.

In the meantime the old rates, it is understood, will stand, and the new rates, or any new rates, will not be made retroactive, it is claimed.

Los Angeles Rehearing Postponed Until Oct. 9

The rehearing of the Los Angeles gase case was postponed from Sept. 25, the date first set, until Oct. 9, according to notice received by the City Attorney at Los Angeles recently. It is understood that Inglewood and other nearby communities have asked permission to join with Los Angeles in the rehearing. Meantime, rates fixed by the railroad commission and originally scheduled to go into effect two weeks ago will be suspended.

Salt Test Method of Checking Pyrometers Demonstrated at National Chemical Exposition

The Brown Instrument Company especially demonstrated to visiting gas company officials the Brown High Pressure instruments at their booth at the National Exposition of Chemical Industries held in New York. Their instruments are now made to 600 ohms, and this high resistance entirely eliminates resistance of lead wires and changes in length of thermo-couples. One indicator instrument, by switch attachment, can take temperatures at the top and bottom of superheater or at one point in the superheater, and one point in the carbureter. As is well known, accurate temperature control is the assurance the superintendent has that the highest efficiency in his plant is being obtained.

BROWN ELECTRIC PYROMETER AS USED IN "SALT TEST" METHOD.

The best superheater temperature has been proven to be from 1,300 deg. to 1,350 deg. Fahr. From 1,250 deg. to 1,300 deg. Fahr. produces too much naphthalene, and 1,400 deg. and above gives excess lampblack.

One of the particular features of the Brown Instrument Company's exhibit at the National Exposition of Chemical Industries, was the salt test method of checking pyrometers. An illustration of the pyrometer used in connection with the testing apparatus is shown herewith. For this test, ordinary salt is chosen, by reason of its being easily obtainable. The salt is placed in a small crucible, and the thermo-couple inserted to a depth of one-half inch. The Brown indicator is connected to the thermo-couple and the crucible heated. When 1,430 deg. Fahr. is reached, the salt begins to melt, this temperature having been ascertained and proven by the United States Bureau of Standards.

The indicating pointer of the pryometer rises to 1,474 deg. Fahr., which is the fusion point, and remains at this temperature for several minutes. The phenomena of the test is that even though the thermo-couple is in this intense heat, which is required to melt the salt, for several minutes the indicator stands still. After the salt has melted, the indicator of the pyrometer assumes its gradual rise, according to the heat of the furnace. If the fusion point of 1,474 deg. is indicated at 1,480 deg., for instance, then it is known that the pyrometer is 6 deg. out. This can then be easily adjusted by the zero adjuster, at the top of the case.

Every pyrometer should be checked by this test occasionally, for the constant changes in atmospheric conditions, vibrations or a slight jar may readily throw any instrument out several degrees.

Grand Rapids, Mich., to Hold the First Better Homes Exposition

From Wednesday, Nov. 28, to Saturday, Dec. 8, 1917, the Great Klingman Exhibition Building in Grand Rapids will be the scene of one of the most interesting expositions ever presented in the United States. This will be known as the First Annual Grand Rapids National Better Homes Show and will be presented under the auspices of the Grand Rapids Association of Commerce, the Greater Grand Rapids Association, the Grand Rapids Art Association and a score of other leading civic, industrial and social organizations.

The exposition is presented in the interests of the manufacturer, the retail dealer, the purchaser and the consumer of anything and everything that goes to make a pleasing home.

Space plans are open and the demand on the part of manufacturers of house furnishings for exhibit space guarantees a wonderful interest and the success of the show. Manufactured articles, furniture, food products and home furnishings that will be eligible for exhibit in the Grand Rapids Better Homes Exposition are high-class furniture, draperies, carpets, rugs, curtains, decorative effects and goods, wall papers, lighting fixtures, art goods, thrift-foods and utensils for Better Homes Cookery; bath and kitchen better utilities, in fact every article of quality that goes to make up a real American home will be permitted to occupy space at the "Better Homes Show."

New Well Makes Company's Capacity 1,236,000,000 Cu. Ft. Per Day

The bringing in of another gas well recently of 25,000,000 cubic feet capacity daily by the United Fuel Gas Company, a subsidiary of the Columbia Gas & Electric Company, makes the total capacity of the latter company 1,236,000,000 cubic feet per day.

Three San Antonio (Texas) Gas Companies Merged

Final papers have been signed whereby the San Antonio (Texas) Public Service Company takes over the former San Antonio Gas & Electric Company and the San Antonio Traction Company, all of which are American Light & Traction Company subsidiaries.

The consolidation has been needed for years but owing to a special Texas law forbidding consolidation of all three types of service by companies in the same city, the merger could not be made until this year when a new law was passed.

The consolidation will reduce the office expense by relieving the necessity for one of the organizations. The officers of the new company will be identical with those of the former companies.

The directors have authorized an issue of $20,000,000 5 per cent first and refunding mortgage gold bonds. Of these, the company is about to issue $2,641,000. The company will also issue $4,700,000 common stock. This financing is to provide for the indebtedness of the old companies assumed by the new company.

Traffic on the San Antonio traction lines has increased 70 per cent during the past month owing to activity at Fort Sam Houston. The company may also serve traffic at Camp Travis and the proposed aviation camp near San Antonio.

A contract has been made with the Minnesota By-Products Coal Company and the St. Paul subsidiary of American Light & Traction Company for delivery to the gas company of about 5,500,000 cu. ft. of coke oven gas a day. The delivery was to have been effected by July 1, but on account of construction delays has been set for Nov. 1, 1917. The gas company will keep its own gas plant in operation and ready to supply all the gas demand if necessary.

Citizens Gas Company of Indiana Submits Interesting Report

The Citizens Gas Company, of Indianapolis, the largest operating company in Indiana, has just issued its semi-annual report for the six months ending June 30, 1917. It is not an index, however, that approaches conditions in numerous other companies, because of the peculiar conditions that surround the Indianapolis company, which operates also the Indianapolis Gas Company, under lease. Economies of various types made by the Citizens Gas Company have resulted in the company supplying gas to consumers at 55 cents a thousand cubic feet.

The report of this company shows that the gross operating income of the company for the six months increased 21.5 per cent over that of the first half of 1916, but that operating expenses show an increase of 38.9 per cent, resulting in a decrease of operating income of 31.6 per cent, and a decrease in net profits of 21.6 per cent. The report also points out that the business has been conducted with considerable difficulty on account of the scarcity and high price of coal and the advancing cost of all labor and supplies required in the business.

The regular operation of the company showed a net loss of $32,401.69 for the six months, but the sale of benzol and cyanide, which are by-products, resulted in net returns amounting to $182,862.48, thus leaving a net profit available for dividends and reserves amounting to $150,460.89, as compared with $268,449.53 for the first six months of 1916.

The regular semi-annual dividend of 5 per cent was paid on March 27; a back dividend at the rate of 10 per cent (accruals from Jan. 1, 1910, to June 30, 1911) was paid on April 30, and a regular semi-annual dividend of 5 per cent has been declared, payable Sept. 27.

The report says that the expiration of old coke contracts will bring an improvement in the revenue from coke. In the six months covered by the report, the company produced 212,397 tons of coke, for which it received $1,027,958.63. The gas sales amounted to 1,410,224,000 cubic feet, which brought in $762,159.64. A total of $132,703.62 was received for 1,489,482 pounds of ammonia. Coal tar produced amounted to 2,223,300 gallons, which sold for $68,261.50. Among the other earnings were: Pintsch gas, $3,734.45; benzol, $153,388.66; cyanide, $15,571.37.

Total operating revenues were $1,991,690.63, and non-operating revenues were $182,862.58.

Total operating expenses, including manufacturing, distribution, etc., amounted to $1,716,709.33. The sum of $58,429.18 was paid out for taxes.

The total net revenue was $399,414.60. Leasehold rental for the property of the Indianapolis Gas Company amounted to $188,446.20. Interest paid out amounted to $60,507.51. The net profits were $150,460.89.

The dividends paid out in the six months totalled $143,198.03. The company invested $60,073.09 in Liberty Bonds. There was a balance on hand on June 30 of $225,327.30. Bonds amounting to $163,660 were sold in the six months. The balance sheet gives the value of the company's property on June 30 as $3,596,956.47, and the Indianapolis Gas Company construction account as $272,630.06. Materials, products, supplies, accounts receivable, cash, investments and other items bring the total assets of the company up to $5,482,460.14. The capital stock is given at $1,500,000; first and refunding bonds, $2,419,000. Other items of liabilities, including an undistributed surplus of $184,648.41, bring the total liabilities up to $5,482,460.14.

Litigation Avoided by Compromise on Gas Rate at Pulaski, N. Y.

Recently George W. Douglas, head of the Pulaski Natural Gas & Oil Company, Inc., filed with the Second District Public Service Commission, of New York, a new schedule of prices for gas in Pulaski, and the town of Richland, the mains extending to Selkirk Leach, four miles from Pulaski.

The prices fixed were 1,000 to 40,000 cubic feet, 62½ cents per 1,000 feet per month; 40,000 to 80,000 cubic feet, 50 cents per 1,000 feet per month; 80,000 feet or over, 40 cents per 1,000 feet per month and a minimum charge of 50 cents per month per meter. These prices were scheduled to go into effect Oct. 1, the present price for gas being 50 cents per 1,000 feet per month.

Following the announcement of the proposed increase in prices

of gas which is used for heating and lighting as well as for the manufacturing purposes, a numerously signed petition protesting against the proposed increase was filed with the board of village trustees, and the Retail Merchants' Association, also entered a protest.

A hearing in the matter was held before the trustees at the office of the village clerk, William K. Bentley.

Previous to the conference William J. Peach, president of the village, suggested to Mr. Douglas that a compromise be made and that the price be fixed at 55½ cents per 1,000 cubic feet of gas, believing that it would be accepted by the interested parties, thus avoiding litigation. The head of the gas corporation considered the matter favorably. He was present at the hearing, and after briefly explaining the greatly advanced prices over previous years for materials used in the production of natural gas, which he said was from 100 to 250 per cent, stated that he was willing to compromise at 55½ cents per 1,000 cubic feet of gas, which was accepted by all of the interested parties and all opposition has been withdrawn, and the amended schedule of prices will be filed with the Public Service Commission.

Town Brings Suit Against Company for Dismantling Plant

The town of Hope, Ind., through its attorneys, Kollmeyer & Sharpnack, has filed suit in the Circuit Court against the Fuel Gas Company of Hope, asking for a restraining order, the appointment of a receiver and $5,000 damages. Violation of an order issued by the Public Service Commission of Indiana is alleged in the complaint.

Some time ago the Fuel Gas Company petitioned the Public Service Commission of Indiana for permission to dismantle its plant and take up the gas mains, declaring the business was no longer profitable. Hope people lodged a protest against this proposed action. The commission ruled that the Fuel Gas Company must continue to furnish the town with gas. Previous to that time the company had surrendered the franchise that had been granted it by the Hope town board and is now operating under an indeterminate permit from the commission.

It is alleged in the suit just filed that, in violation of the commission's order, the gas company is dismantling its plant and preparing to take up the mains and sell them to people in Oklahoma.

Store Sales Increased 100 Per Cent. for Eleven Days After Novel C.E-Z Display at Cincinnati Pure Food Exposition

Welsbach Company, Cincinnati, Ohio, Branch Secures 20,000 Signatures in Ten Days and Demonstrates Lights to 100,000 People by Souvenir System

In a report on the activities of the Cincinnati branch of the Welsbach Company submitted by C. D. Corbus, manager in that city, some remarkable results are brought out, considering the comparatively simple method of obtaining them.

A display booth was secured at the Municipal Pure Food Exposition, held at Chester Park, Ohio, Aug. 7 to 19, and it evolved upon the local management of the Welsbach Company to make the exhibit bring results.

The souvenir idea was decided upon, and it was concluded to give one out of every hundred signers a C. E-Z Lamp. The show management supplied the company with 10,000 admission tickets for distribution and a set of duplicate yellow and white cards were printed. These cards contained a number and space for the name and address, and two lines to be checked if using gas or electricity, or both. Each card was given a number, the company holding one and the signer the other.

Not having had any previous experience of this kind, Mr. Corbus thought the results would be good if 1,000 signatures per day were obtained, but after the first day it was seen that the estimate was too low and 2,000 cards were used each day, and ten lamps given away.

Each morning a sheet containing the ten winning numbers for the day was made up in such a way that the winner's name could be entered opposite, and was sealed and kept in the office until 10 o'clock each night. The winning numbers were then picked out and posted, and each succeeding day's winners' names were posted under each other, so that at the expiration of the show, all the 110 names were on exhibition.

20,000 signatures were secured, and after the repeaters and cards signed by more than one member of a family were taken out, there were 14,947 individual signers. Of these 12,506 used gas, only 1,155 electricity, and 1,286 both gas and electricity. The store sales on these goods for the eleven days after the show and before this report was submitted, showed an increase of 100 per cent over the sales for the same number of days before the show. Mr. Corbus was satisfied that 100,000 people saw the demonstration, and believed this high-water sales mark would be maintained for some time.

Indiana Commissioners Make New Order for Terre Haute

Correcting errors in a former order from the former Public Service Commissioners of Indiana, the newly constituted commission has just handed down a supplemental order in the case of the Commercial Club of the City of Terre Haute against the Citizens Gas and Fuel Company, of that city, under which a modification of rates is promulgated for that company, the small consumer's rate being lowered to 80 cents. The respondent to the case has indicated that it is willing to agree to these rates, which range as low as 50 cents a thousand cubic feet, according to the text of the order.

Boston Company Proposes to Make New Contract for Purchased Gas

The Boston Consolidated Gas Company, by its president, William A. Wood, has addressed a petition to the Massachusetts Gas and Electric Light Commission, in which it states that "notwithstanding its expressed intention to at once commence the construction of an additional plant, it finds that conditions created by the war have made it inexpedient to do this at present." It has therefore asked the New England Fuel & Transportation Company, successor of the New England Gas & Coke Company, to make a new contract for the supply of gas during the period of abnormal conditions.

The contract provides that from Oct. 1, the fuel company agrees to sell to the gas company, and the

latter agrees to buy, all gas having a heat value of not less than 575 B.t.u.'s not needed by the fuel company in the operation of its manufacturing plant. The gas is to be delivered not purified of carbon dioxide and of sulphur impurities. The price to be paid shall be 29.5 cents per 1,000 cu. ft., but if the cost of purifying exceeds .5 cent per 1,000 cu. ft. the fuel company shall rebate such excess cost. This shall be determined by multiplying the number of thousand cu. ft. by the excess of the average cost per thousand cu. ft.

If during any period of seven consecutive days the average heat value shall fall below 575 B.t.u., the fuel company shall pay to the Gas company $1,500 as liquidated damages; provided that if any day has once been included in the period of seven consecutive days it shall be excluded from any other similar period. No gas shall be delivered having less than 500 B.t.u.'s.

The fuel company agrees to deliver at least 5,000,000 cu. ft. during each 24-hour period, and if the amount falls below this, except for strikes, fires or other unavoidable causes, the Gas company shall receive 15 cents per 1,000 cu. ft. as damages.

If the government demands the production or removal of toluol from the gas furnished, the fuel company shall be relieved from the obligation to comply with the standard of heat value, and an adjustment of price will follow.

The contract runs until terminated either by the Commission or by either of the companies, upon proper notice.

Property Owners Must Pay Gas Company for Laying Main If They Wish Service

The St. Joseph (Mo.) Gas Company will not have to lay a main in Mulberry Street, from Twenty-fifth to Twenty-sixth Street unless the six property owners on the block make certain compensation to the company. This was the gist of the order made by the Public Service Commission, copies of which reached St. Joseph recently.

The order is a lengthy one, and is based on the hearing held Aug. 20, when Chairman Busby of the commission listened to the testimony. It recites the estimates of Engineer Towle, also of the commission, that 560 ft. of 4-in. main and six service stubs would be required, at a cost of $673.36, and also six meters at $9.30 each, or a total of $729.16. That this expense would not be justified by the amount of gas that would be used by the six families in the block, only two of which owned their homes, is the opinion of the commission, which ordered that the main be laid on condition that the residents of the block pay $9 a month for three years plus 30 cents for 1,000 feet for all gas used up to 5,000 ft., and 60 cents for all over that amount, the arrangement holding for three years.

Any other plan reached by the company consumers, however, would be agreeable to the commission, which holds jurisdiction in the case, in order to see that any arrangement made is carried out.

Seattle, Wash., Company Asks Higher Rates Through Ready-to-Serve Charge and Lower Discount

Only two changes are requested by the Seattle Lighting Company in their appeal for higher rates. The first is the elimination of the minimum charge, and substituting a ready-to-serve charge therefor. This charge has been recognized by different Public Service Commissions throughout the United States as fair and reasonable. The particular method in which this company is applying it is already used in Pennsylvania, Ohio, Louisiana and other states.

This ready-to-serve charge is in the sum of 25 cents per month, and will be charged every consumer for each active service. A service will be considered active when a contract is accepted by the company and a meter set to supply gas therefrom.

The second change is a reduction of the discount on the first 5,000 feet of gas consumed from 25 cents to 10 cents per thousand feet.

North Shore Gas Company Talks of Raise in Rates

It is expected that the North Shore Gas Company, Waukegan, Ill., which supplies Lake Forest, Highland Park, Winnetka, Lake Bluff and Glencoe, will ask the State Public Utilities Commission's permission to raise their rate from 90 cents per thousand cubic feet to $1 as a result of the price of coal and oil.

Rochester Plant Must Have Guarantee of Coal or High Rate

General Manager James T. Hutchings, of the Rochester Railway & Light Company, has stated that unless a supply of coal is secured by the company enabling it to open the new gas plant by the first of next year it will be necessary to raise the price of gas to consumers 10 or 12 cents per thousand cubic feet.

The company is now making gas from gas oil purchased at the rate of eight cents a gallon, an increase of four and seven-tenths a gallon over the price paid last year. The new plant cannot be opened until there is a supply of 100,000 tons of coal guaranteed to the company for the next year's consumption. Fuel Administrator Dr. Harry A. Garfield was recently approached by Mr. Hutchings on this question, but so far has not seen his way clear to guarantee the supply.

Permission for Rate Increase Granted by Oklahoma Commission

An increase to 35 cents a thousand cubic feet was made in the price of gas to domestic consumers of Nowata and Delaware, in an order of the Oklahoma State Corporation Commission recently. The rate has been 30 cents.

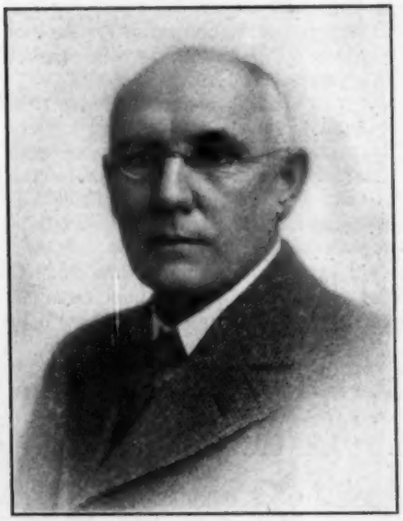
The distributing company, the Nowata County Gas Company, also is allowed to exact a ready-to-serve charge of $1 a month and to require a meter deposit of from $2 to $5 by provisions of the order.

Coke Production Report

Operators in the Connellsville, Greensburg and Latrobe districts reported for the week of September 22 a production of 70.5 per cent of their rated capacity, as compared with 73.7 per cent for the preceding week. The declining ratio of production to capacity was accounted for by a shortage of coke cars. Losses attributed to this cause were 10.6 per cent of the full-time capacity as against 6.6 per cent in the week of September 15. The production of coal for shipment decreased more sharply—falling from 38.3 to 32.3 per cent of the capacity as indicated by the railroad rating. This loss was caused by lack of coal cars and by an increasing shortage of mine labor.—Report by C. E. Lesher.

Personal Notes

WILLIAM BYRON KEFFER, whose death was noted in the September 29 issue of the AMERICAN GAS ENGINEERING JOURNAL, was born at Homer, then the county seat of Webster County, in 1855. He was



WILLIAM BYRON KEFFER

brought to Des Moines when only a year old. In early life he was in the employ of Frederick M. Hubbell, and later of the Des Moines Water Company. Mr. Keffer was employed for nearly thirty years by the Des Moines (Iowa) Gas Company, and at the time of his death was assistant secretary and assistant treasurer of the company, secretary of the Iowa District Gas Association and a member of the National Commercial Gas Association.

AUGUSTUS T. THROOP, general manager of the electric department of the Utica Gas & Electric Company, is soon to go to Wilmington, Del., to take a position with the American Railway Light Company. One afternoon recently when he went to his desk he found a gold watch and chain and a gold knife. A card explained that the gifts were from his fellow employees in the Utica Gas & Electric Company's office, and their best wishes went with them. Mr. Throop prizes the gifts highly.

ALVORD H. ROSE, deputy gas inspector connected with the Massachusetts Gas & Electric Light Commission, has entered the government service in a technical capacity. He has been granted a leave of absence by the commission.

HOWARD F. HEMENWAY, superintendent of the Westboro (Mass.) Gas & Electric Company for the past five years, recently resigned. Mr. Hemenway has accepted a position in the electrical department at the government arsenal at Springfield. His successor at Westboro has not as yet been named.

EARL BROSHAR is now assisting in the management of the gas plant of the Public Service Company at Ames, Iowa.

WILLIAM JONES, for the past fifteen years connected with the Wisconsin Traction, Light, Heat & Power Company at Appleton, Wis., and for the last ten years superintendent of the gas department, tendered his resignation which took effect Sept. 30. Mr. Jones is now with the Michigan Light Company, Bay City, Mich., as superintendent of manufacture.

Societies and Associations

THE GLOUCESTER (MASS.) GAS LIGHT COMPANY employees recently held their annual outing at Paynter's Farm, West Gloucester, where a clam bake was enjoyed by all present. One of the features of the day was a ball game between the married and single men. A tug-of-war was also participated in, and won by the married men after a struggle of about fifteen minutes.

Construction Notes

Funds Secured for New California Pipe Line

C. S. S. Forney, vice-president of the Central California Gas Company, has announced that sufficient funds have been secured by the corporation for the construction of a natural gas line from the Midway fields to Visalia, Cal.

Contract for Gas Plant Housing Awarded at Bellefontaine, O.

Bellefontaine's new gas plant will be completed and ready for operation on or about Feb. 1, 1918, according to the agreement made by the contractors.

The contract for construction of the building to house the plant was awarded recently to D. W. McGrath of Columbus at his bid of $12,498. His bid was the lowest of three submitted.

Erection of the foundations will start at once, Mr. McGrath promised the officials. His company employs from 300 to 500 men the year around and is equipped to finish on contract time.

Then the Gas Machinery Company, of Cleveland, which has the contract to furnish about $60,000 worth of gas-making machinery, will install the machinery whenever the foundations are ready.

The new building will be of steel, asbestos and brick.

The plant will cost when completed, about $85,000. The bond issue provided is for $85,000.

Grand Rapids Company Now Settled in Its New Quarters

The Grand Rapids (Mich.) Gas Light Company recently moved into its new building on Division Avenue, N. The company has occupied its old quarters at Ottawa Avenue and Pearl Street, N. W., for twenty-five years.

East Idaho Gas Company Buys Land for New Plant

The East Idaho Gas Company has bought the Monroe tract of eight acres and will proceed with the construction of the gas plant as rapidly as possible.

Pennsylvania Gas Plant Being Dismantled

The Consumers Gas Company is dismantling the producing plant located a short distance east of Birdsboro, Pa., having sold it to a gas company in Chester County. When the Birdsboro Gas Company started in business some seven years ago, the plant was erected, but since the transfer to the Consumers company, the gas is brought from Reading and there is no need of the producing outfit.